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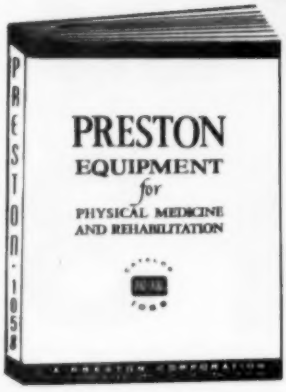

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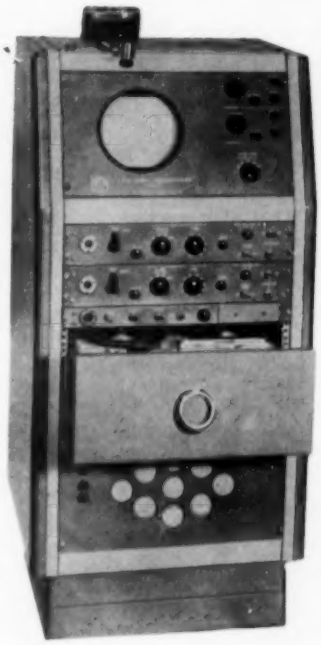

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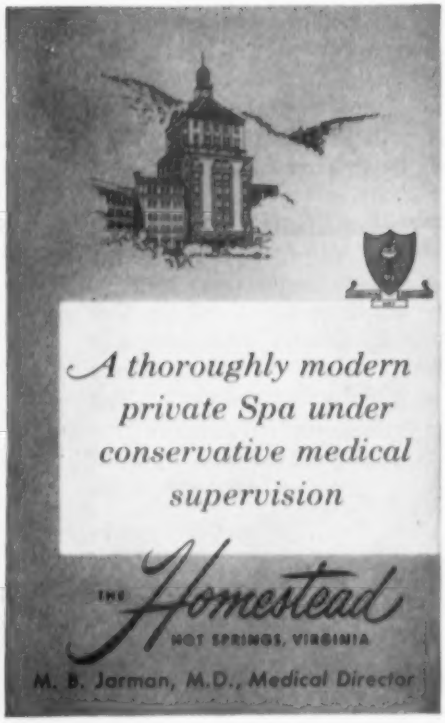
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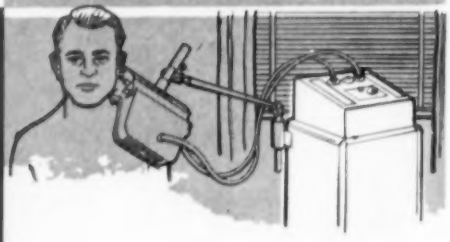

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Measurements of Peripheral Blood Flow Under Conditions of Physiologic Stress

C. J. Imig, Ph.D.
Harold Gaskill, Jr., M.S.
Adelia Bauer, M.S.
and
H. M. Hines, Ph.D.
Iowa City

It is generally accepted that measurements of the volume of blood flow through either an extremity or an organ reveal important information concerning the functional state of the vascular bed. However, there is a lack of agreement and uniformity as to the precise conditions under which the volume of flow measurements should be made. In this study a comparison was made of the volume of blood flow in the calf region of the leg of normal adult human subjects with that in adults with a clinical diagnosis of peripheral vascular disease. In each group the blood flow determinations were made under two physiologic conditions. In one the flow measurements were made under basal and resting conditions. In other experiments on the same subjects the blood flow determinations were carried out immediately following a standard exercise. In this way it was possible to measure blood flow under two levels of requirements—one where the requirement was basal or minimal and another where the requirement was augmented by the increased demand resulting from the stress or strain of exercise. Since the average age of the patients with peripheral vascular disease was somewhat greater than that for the normal control groups, a group of subjects of comparable age without vascular disease was included as an additional control for the effects of age per se on blood flow.

Experimental Procedure

Blood flow was measured by a technic of venous occlusion plethysmography which was essentially an adaptation of a method employed in previous studies on blood flow in the hind legs of dogs.[1] The calf region of the leg from the level of the tuberosity of the tibia to a level 12¾ inches (about 32 cm.) distal was enclosed in a plexiglass box (fig. 1). The rubber sleeve through which the leg is placed is made of dental dam. Two

Fig. 1 — Experimental room showing subject and equipment in position for measurement of volume blood flow through the calf of the leg.

heavy rubber rings are cemented to either end of the sleeve and placed on the six bolts protruding from the perimeter of each leg hole. Two sealing rings are made of the same kind of heavy rubber and cut to conform to the contour of the leg at the proximal and distal ends of the box by using metal rings and bolts. A detailed description of the construction of the plethysmograph box, its openings, calibration, and the technic employed for recording volume changes have been described in detail elsewhere.[1]

Read at the Thirty-fourth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Atlantic City, N. J., September 11, 1956.

From the Departments of Physiology and Orthopedic Surgery, State University of Iowa.

This study was aided by a grant from the Board in Control of Athletics, Inc., State University of Iowa.

Venous occlusion was accomplished by the rapid inflation of a Riva-Rocca type pressure cuff (8.3 cm. in width), with a pressure sufficient to occlude the venous outflow without interference to the arterial inflow. The volume of the limb in which the circulation was measured was determined by water displacement. During the course of an experiment volume blood flow measurements were made at approximately 20-second intervals.

The condition of the subjects was rigidly controlled in that food was not consumed for 4 hours prior to a measurement, the subject rested in a supine position for 30 minutes before a test in a room maintained at 22-24 C., and the subject was not allowed to indulge in tobacco for at least 2 hours prior to an experiment.

The exercise stress pattern employed consisted of voluntary maximal rhythmic alternate dorsal and plantar flexion of the foot for a period of one minute in response to a metronome set at 60 beats per minute. In all experiments blood flow was measured before and at intervals for a period of 10 minutes after termination of the exercise.

Results

The data on the volume of blood flow in the various groups expressed in cubic centimeters per minute per 100 cc. of tissue are summarized in figures 2 and 3. The mean pre-exercise or control volume blood flow obtained from a group of twelve young normal adults ranging from 25 to 33 years of age was 3.32 cc. per 100 cc. of tissue per minute. This value was slightly but significantly lower than that obtained from a group of nine normal older subjects ranging from 46 to 81 years of age. In measurements made within 30 seconds following a one-minute period of exercise, the volume of blood flow increased sevenfold and within 10 minutes returned to pre-exercise values. The magnitude of the post-exercise hyperemia was essentially the same in the two age groups. Six patients with a diagnosis of peripheral vascular disease in their lower limbs exhibited normal values for blood flow in the pre-exercise or control condition. However, this group exhibited little or no hyperemia in the post-exercise measurements (figs. 2 and 3).

Discussion

The capacity of the vascular system to adjust the volume of blood flow in accordance with the physical and metabolic needs of tissues is well recognized. It is conceivable that peripheral circulatory mechanisms might be entirely adequate to meet the basal or resting blood flow requirements but inadequate to meet requirements brought about by

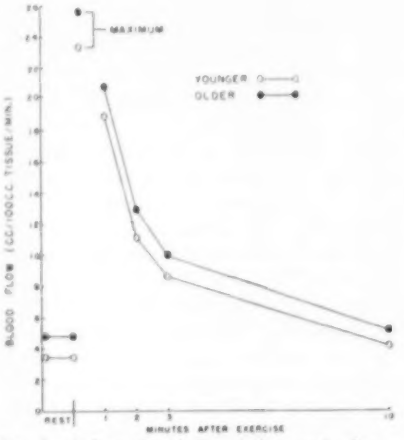

Fig. 2 — Volume blood flow before and after a standard pattern of exercise in normal younger subjects (25 to 33 years) and normal older subjects (46 to 81 years).

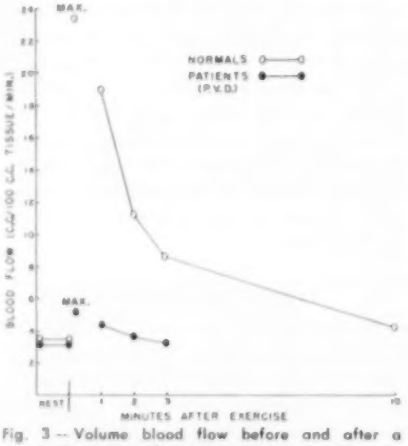

Fig. 3 — Volume blood flow before and after a standard pattern of exercise in normal adult subjects and patients with clinical diagnosis of peripheral vascular disease.

stress situations such as exercise. Our findings on subjects with a clinical diagnosis of peripheral vascular disease indicate that the extent of the hyperemic response to a physiologic stress provides a better method for evaluating the status of the peripheral vascular bed than measurements of the basal or resting blood flow. The hyperemic response to exercise will depend upon the duration, intensity, and pattern of exercise. Because of the mechanical impediment offered to blood flow by the contracting muscle fibers, we chose to employ for comparative purposes the values for blood flow immediately following the termination of a standard pattern of exercise rather than values obtained during the course of exercise. The data on blood flow in the older age group free from any known peripheral vascular disease warrant the conclusion that age per se has no significant effect on exercise hyperemia and suggest the presence of peripheral vascular impairment when the hyperemic response to exercise is either absent or greatly reduced.

Summary

Studies were made on the volume of blood flow in the calf region of adult human subjects by a technic of venous occlusion plethysmography. Blood flow was measured under standard basal resting conditions and following a standard pattern of exercise. Age had little effect on either the resting blood flow or the post-exercise hyperemia. Patients with a clinical diagnosis of peripheral vascular disease exhibited normal values for resting blood flow but exhibited either little or no increase in blood flow following exercise. This finding suggests that the amount of hyperemic response to a physiologic stress, such as a standard exercise, provides a better evaluation of the functional status of the vascular bed than measurements of the resting blood flow.

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. . . . . *briefly speaking*

74 OF THE 80 AMERICAN medical schools in existence in 1953 spent $66.3 million for research during fiscal 1953-54. The Federal Government provided slightly over half of the funds for supported research.

AN ATOMIC ENERGY COMMISSION official has announced that industry is saving nearly $400 million annually through the use of radioisotopes. For every dollar of federal expenditure on the production and distribution of radioisotopes, $750 are being returned to the national economy through savings effected in industry, medicine and agriculture. These savings are expected to increase several-fold. For example, the market for radioisotope thickness gages is less than 10 per cent saturated. It is reported that such installations, on the average, have been found to pay off the initial investment in less than a year — sometimes within a few months.

THE NATIONAL SCIENCE FOUNDATION has granted $138,000 to 18 colleges and universities in the United States and its territories to support in-service institutes designed to improve the training of high school teachers of science and mathematics. In-service institutes will begin in the Fall of 1957 and will run through the academic year 1957-58. Each will offer special courses in the subject matter of science or mathematics especially designed for the needs of high school teachers.

Gradients of Functional Ability of Importance in Rehabilitation of Patients with Progressive Muscular and Neuromuscular Diseases

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Although isolated muscle testing is of value in progressive muscular and neuromuscular diseases for the purpose of following the changes in individual muscle power, from the rehabilitation standpoint, the collective functional abilities of agonist, antagonist, synergistic, and stabilizing muscles which enable the patient to perform activities of daily living are of greater importance. We have previously alluded to the value of rating the functional ability of patients with progressive muscular dystrophy.[1]

It is just as difficult to erect a suitable classification of functional abilities that might be of help in looking at the perspective of these progressive diseases as it is to construct a classification for the diseases themselves. For example, a patient with progressive muscular dystrophy or atrophy is frequently found who can perform several activities of one functional stage and others of another category. Likewise, some clinical types of these diseases are at times difficult to place in an appropriate category. Nevertheless, we have found that by using a functional classification of the disability in both progressive muscular dystrophy and atrophy that we do obtain assistance in the over-all evaluation of these patients.

The following eight gradients of a functional ability are based on the pattern, ability and method of ambulation, and adequacy of activities of daily living. The use of the classification will be illustrated by plotting on a grid the progressive stages of functional disability of three clinical types of progressive muscular dystrophy and an infantile and adult type of progressive muscular atrophy.

Criteria for Rating Eight Stages of Functional Ability

1. Ambulates with waddling gait and marked lordosis. Elevation activities adequate (climbs stairs and curbs without assistance).
2. Ambulates with waddling gait and marked lordosis. Elevation activities deficient (needs support for curbs and stairs).
3. Ambulates with waddling gait and marked lordosis. Cannot negotiate curbs or stairs, but can achieve erect posture from standard height chair.
4. Ambulates with waddling gait and marked lordosis. Unable to rise from a standard height chair.
5. Wheelchair independence: Good posture in the chair; can perform all activities of daily living from chair.
6. Wheelchair with dependence: Can roll chair but needs assistance in bed and wheelchair activities.
7. Wheelchair with dependence and back support. Can roll the chair only a short distance, needs back support for good chair position.
8. Bed patient: Can do no activities of daily living without maximum assistance.

In the first three stages of progressive disability the patient ambulates independently with disturbed pattern primarily because of weak abdominal and

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gluteal muscles (lordosis and bilateral Trendelenburg gait).

In the fourth stage a critical point is reached in which the patient can no longer push himself erect from the sitting posture, but can ambulate if assisted in getting into an erect position. Such a patient can be handled in one of the following ways:

1. Someone lifts him to a standing position and the patient then ambulates independently.
2. He is supplied with a wheelchair with a hydraulic lift. By elevating the chair seat, the patient can become sufficiently erect to begin ambulating independently.
3. Patient is placed in a wheelchair and is taught all activities of daily living except ambulation, from the wheelchair.

There is an unfortunate tendency to allow patients in this (fourth) stage to become bed patients; whereas, if they are properly managed, they can learn to transfer from wheelchair to bed and toilet and reverse and thus be independent for a significantly longer period of time. If the patient has childhood dystrophy with rapid progression, this independent wheelchair stage may last only 2-3 years; on the other hand, this stage may last 10-15 years or more in a patient with facioscapulohumeral dystrophy or amyotonia congenita.

The patient in the wheelchair (stages 5-7) becomes gradually less efficient in performing activities of daily living as the illness progresses. In stage 7 the weakness has involved the trunk to a degree that the patient cannot maintain a satisfactory wheelchair position without the assistance of a back brace. Often the improved chair posture provided by the brace will enable the patient to handle the chair with much greater efficiency. It is essential that the wheelchair patient (stages 5-7) and the bed patient (stage 8) be given the physiological and psychological value of daily erect posture either by use of appropriate braces or a tilt table.[1]

There is no unanimity of opinion regarding the classification of progressive muscular dystrophy.[2-7] Some authors recognize a large number of types as distinctive clinical entities. The situation is not unlike that which exists in the field of biological taxonomy where some separate species on minor differences (splitters) whereas others tend to separate species only on the basis of major differences (lumpers).

No matter what classification is used, patients are always encountered whose history of involvement is not characteristic of the group. Nevertheless several distinctive groups fit the great majority of cases of progressive muscular dystrophy. We have therefore adopted a classification based on the comprehensive studies of Tyler, Wintrobe and Stephens[3-6] and Adams, Brown and Pearson.[7] The merits or deficits of the classification will not be discussed. In order to facilitate the clinical identification of the cases subsequently presented, the salient features of four types of progressive muscular dystrophy are summarized.

Clinical Types of Progressive Muscular Dystrophy

1. Childhood Dystrophy (Pseudohypertrophic — Duchenne — severe generalized)
   A. *Mechanism of hereditary transmission:* Sex-linked recessive trait with high mutation rate. Found almost exclusively in the male.[5, 6]
   B. *Age of onset:* 2-10 years.
   C. *Sequence of muscle involvement:* Glutei, abdominals, anterior tibial, peroneals, erector spinae. Late and minor face involvement. Muscles of respiration.
   D. *Prognosis:* Poor. Great majority die before age 20.[7]
2. Facioscapulohumeral Dystrophy (Landouzy-Dejerine—mild restrictive)
   A. *Mechanism of hereditary transmission:* Somatic dominant. No sex predilection.[4]
   B. *Age of onset:* 10-18 years.
   C. *Sequence of muscle involvement:* Face, pectoralis major, lower trapezius, deltoid and

other scapular muscles. Erector spinae, abdominals, glutei, peroneal, and anterior tibial.[4,7]

D. *Prognosis:* Fair—slow but variable.—Some patients with disability live virtually a normal life expectancy.

3. Myotonic Dystrophy (Dystrophica Myotonica, Distal Dystrophy)
   A. *Mechanism of hereditary transmission:* Somatic dominant. Onset earlier in child than parent.[7]
   B. *Age of onset:* 15-80 years.
   C. *Sequence of muscle involvement:* Small hand muscles, forearms, anterior tibial. Masseters and sternocleidomastoid nearly always involved. Levator palpebrae superioris (ptosis), facial muscles.
   D. *Muscle reactivity:* Prolonged contraction of muscles following electrical or mechanical stimulation. Delayed relaxation following strong voluntary contraction.
   E. *Associated defects:* Gonadal atrophy, reduced libido, cortical cataracts.
   F. *Prognosis:* Poor. Slowly progressive with involvement of muscles of deglutition and mastication.
4. Ophthalmoplegic Dystrophy (Progressive dystrophic ophthalmoplegia)
   A. *Mechanism of hereditary transmission:* Somatic dominant. Hereditary history in one-half the cases.[7]
   B. *Age of onset:* 1-40 years.
   C. *Sequence of muscle involvement:* Levator palpebrae superioris (ptosis) extrinsic ocular muscles (ophthalmoplegia), facial muscles, occasionally sternocleidomastoid and other neck muscles.
   D. *Prognosis:* Good. Disabling but ordinarily not fatal.

Examples of the progressive functional disability of three of the above four types of progressive muscular dystrophy are plotted on the grid in figure 1.

The attempt to use functional criteria for rating the progressive muscular atrophies is complicated by confusing the clinical identity of the syndrome as well as by the widespread muscle weakness in infantile types. The uncertainty of syndrome identity concerns the relationship of the infantile progressive muscular atrophies of Werdnig-Hoffman and amyotonia congenita (Oppenheim's disease).

In 1900 Oppenheim[8] described three cases that presented congenital, universal weakness, flabbiness of muscle, and laxness of the joints. He believed there was no progression of the weakness. Although originally designated as myatonia congenita, in order to prevent confusion with Thomsen's disease (myotonia congenita), the syndrome is now designated as amyotonia congenita. Some writers[9] believe this to be a variant of the earlier described syndrome of Werdnig-Hoffman.[10, 11] The onset of Werdnig-Hoffman progressive muscular atrophy is during the last half of the first postnatal year. The muscular weakness progresses rapidly from trunk involvement to the shoulder and pelvic girdles. The distal limb and facial muscles are usually spared, but death commonly occurs within five years from date of onset from involvement of the muscles of respiration and deglutition.[7] Brandt[11] pointed out that all three of Oppenheim's original patients later died and believes that these three cases were examples of the previously described syndrome of Werdnig-Hoffman. It is generally agreed that in both of these conditions the muscle weakness is secondary to progressive lower motor neuron degeneration of unknown etiology. In this country the appellation amyotonia congenita (Oppenheim) is usually applied to infantile progressive muscular atrophy if the lower motor neuron degeneration appears to progress slowly or to be static. The case we shall present has remained virtually static for many years, and the patient is now 32 years of age.

The muscle weakness of amyotonia congenita is generally quite symmetrical and almost universal. It varies considerably in severity. Problems of ambulation arise early and are seriously limiting fac-

tors. An example of the progressive functional disability of a case of infantile (amyotonia congenita) and adult (Charcot-Marie-Tooth, peroneal atrophy) progressive muscular atrophy are also plotted on the grid in figure 1.

Data from Case Records

Essential data from case records of the patients whose progressive muscular weakness is indicated in figure 1 follows:

1. Patient I. M.:
   A. *Current age and sex:* Died at age 19, male.
   B. *Initial and sequence of muscle involvements:* Onset age 5 in abdominal hip and thigh muscles bilaterally. Followed by trunk, shoulder girdle and muscles of respiration and deglutition. Died of intercurrent infection six months after becoming a bed patient.
   C. *Diagnosis and confirmation:* Childhood progressive muscular dystrophy confirmed by biopsy and electromyography.
2. Patient B. W.:
   A. *Current age and sex:* 45-year-old male.
   B. *Initial and sequence of muscle involvement:* Onset age 14. Left shoulder, arm and face, followed by left hip and thigh then right hip and thigh. Marked right facial paralysis, said to be secondary to pertussis at age 2, or 10 years prior to onset of muscular dystrophy.
   C. *Diagnosis and confirmation:* Facioscapulohumeral muscular dystrophy. Confirmed by biopsy and electromyography.
3. Patient B. M.:
   A. *Current age and sex:* 53-year-old female.
   B. *Initial and sequence of muscle involvement:* Onset age 32. Weakness of hand and forearm muscles, followed with atrophy and weakness of muscles of face, deglutition, and mastication, with nasality and dysphagia. Lower extremity weakness began at age 37 and involves muscles of trunk, abdomen, hip, and thigh.
   C. *Diagnosis and confirmation:* Myotonic dystrophy. Myotonic response present and observed electromyographically. Muscle degeneration observed in biopsy specimen.
4. Patient S. H.:
   A. *Current age and sex:* 32-year-old female.
   B. *Initial and sequence of muscle involvement:* Almost universal distribution of weakness noted at third postnatal month. Pulled to erect position at 15 months. Ambulated unsteadily by holding to objects at 18 months. Ambulated with lordosis, waddling gait, and frequent falling, but could climb stairs with assistance until age 13. Back fusion with 12 months of casting at age 13. Subsequently could not walk for approximately two years. Can now ambulate short distances if lifted to erect position or uses hydraulic lift of wheelchair.
   C. *Diagnosis and confirmation:* Amyotonia congenita. Confirmed by electromyography (fibrillation potentials). Tongue shows visible fibrillation.
5. Patient R. F.:
   A. *Current age and sex:* 32-year-old male. (Has a 36-year-old sister with almost identical history of onset and progression of muscle weakness.)
   B. *Initial and sequence of muscle involvement:* Onset at age 19 in muscles of left leg, then right leg, followed by bilateral thigh and hip muscle weakness, now affects the upper extremities. Fasciculations in muscles of all extremities.
   C. *Neurological examination:* No sensory loss nor signs of upper motor neuron involvement. Fibrillation potentials found in all extremities with electromy-

ography. Visible fibrillation on lateral aspect of tongue.

D. *Diagnosis and confirmation:* Peroneal muscular atrophy (Charcot-Marie-Tooth). Confirmed by electromyography and biopsy.

In figure 1 the sequence of functional disability of these patients is graphically illustrated by plotting the eight previously described functional gradients of disability with respect to the age of the patient at which a given stage was reached.

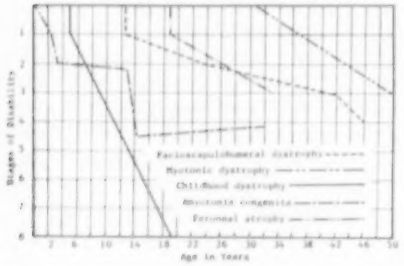

Fig. — 1 Changes in functional ability as related to age in patients with childhood, facioscapulohumeral, and myotonic progressive muscular dystrophy and infantile (amyotonia congenita, Oppenheim) and adult (peroneal atrophy) progressive muscular atrophy.

It is apparent from examination of the longitudinal perspective of these patients that there is a direct relationship between the slope of the line from left to right and functional disability. The three cases of progressive muscular dystrophy are quite typical of their clinical type and clearly indicate the significant difference in prognosis of these three types.

A defect of this type of representation is illustrated by the graphic representation of the patient with myotonic dystrophy (B. M.). This patient can ambulate independently and currently is a stage 4 patient. The serious muscle weakness is in the sternomastoid, muscles of mastication, facial expression, and deglutition. This patient could conceivably succumb to intercurrent infection while still able to ambulate without mechanical assistance.

These data also emphasize the necessity of making an accurate diagnosis of the clinical type of progressive muscular dystrophy when undertaking an objective study of the effectiveness of rehabilitation procedures.[13, 14]

The patient with amyotonia (S. H.) is not quite representative of the course of the average case of this disease but was selected to emphasize the very great difficulty encountered in attempting to overcome the disuse atrophy which occurs with prolonged immobilization. At the point where the curve for this patient drops abruptly (fig. 1), the back was surgically fused to correct the increasing scoliosis. This procedure required nearly 12 months of virtually complete immobilization with plaster body casts. After cast removal the patient could not ambulate and only by intensive therapy was the disuse atrophy overcome. The patient now has a severe scoliosis.

It is tempting to extend the curves beyond the present age by assuming that the current rate of change will continue, and thus use points beyond for predictive purposes. For example, if the curve for patient R. F. (peroneal muscular atrophy) is projected through to age 50, it would appear that the patient would be at stage 5 at this age. Although it is possible that such a prediction might hold true for muscles of the extremities, there might be acceleration of the degeneration of the lower motor neurons subserving muscles of respiration and other vital functions which might result in prior death. The natural history of the progressive muscular atrophies is so variable that use of the graph for predictive purposes is not warranted. Nevertheless we have found that preparation of data of this type does enable us to review in longitudinal fashion sequence of past events and to anticipate some of the rehabilitation problems which may be forthcoming. As more study is given to criteria for classification and improvements are made in methods of evaluating these changes, data of this type may also assist in our understanding of the natural history of these diseases, and assist us to keep these patients at an optimal physical condition within the changing limitations of their illness.

Summary

Eight stages of functional disability are described. These gradients of progressive disability encompass criteria essential to proper ambulation pattern, method of ambulation, and efficiency in performance of activities of daily living.

A grid relating time (age in years) to the eight gradients of functional disability is presented. The use of the rating grid is illustrated by plotting the essential data from a case of childhood and facioscapulohumeral and myotonic progressive muscular dystrophy and a case of infantile (amyotonia congenita) and adult (peroneal muscular atrophy, Charcot-Marie-Tooth) progressive muscular atrophy.

Graphic expression of progressive disability in muscular dystrophy and atrophy in functional terms enables visualization of the natural history of the disease and anticipation of problems of importance in rehabilitation. These data also emphasize the necessity of clearly segregating the clinical types of progressive muscular dystrophy when embarking upon an objective evaluation of the technics of rehabilitation.

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POSTMASTER GENERAL SUMMERFIELD reports that more medical quackery is being promoted through the mails today than ever before. Postal inspectors have investigated quackery cases in the mails representing an annual loss to the public of at least $50 million. Some of the most common medical frauds are "dietless" reducing schemes, "sure cures" for cancer, arthritis, skin diseases, baldness and impotence. Also popular: bust development gimmicks.

Flexibility Characteristics of Three Specialized Skill Groups of Champion Athletes

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In a previous article[1] I presented evidence that significant differences exist between the flexibility means of four specialized skill groups of college athletes and the flexibility means of a group of 16-year-old boys taken as norms for comparison. Evidence was also presented to the effect that the specialized flexibilities found among the college athletes varied with each of the special skill groups. These skill groups were swimmers, baseball players, basketball players, and track men.

Desiring to pursue the study of flexibility characteristics further in order to find its implications for other activity specialties and other levels of specialization, I studied the flexibility characteristics of three groups of champion athletes. Each group represented a different sport and all three groups were participants in sports other than the four previously reported. Selection of champion athletes only for study limited the available subjects to small numbers. However, such a high criterion of selection should also give greater significance to any flexibility characteristics of the activity specialty found.

Procedure

The groups selected for measurement and the bases for selection were as follows:

1. *Weight Lifters:* 5 weight lifters varying in age from 25 to 46 each of whom was, at the time of measurement or previously, a national champion in weight lifting or a "Mr. America" title winner and was still actively participating in weight lifting.

2. *Gymnasts:* 11 gymnasts all of whom were members of the 1953 national collegiate championship team and who, at the time of measurement, had just completed the season in which they won the championship.

3. *Wrestlers:* 9 wrestlers all of whom were members of the 1953 national collegiate championship team and who, at the time of measurement, had just completed the season in which they won the championship.

Subjects who had won championships or were members of championship teams were selected in an effort to make certain that the subjects measured had trained for and participated in their particular activity long enough to allow for structural changes that might occur in or affect the joints. It was believed that setting the criteria this high would bring forth evidence of high or low specialized flexibility performance ability that might accompany participation in each particular activity. The number of subjects in each case represents the total number available at the time of measurement. There is no problem of accurate sampling involved since the criteria called for those individuals who had been judged the best performers in official competition.

All subjects were measured at room temperature, 72 F.; in no instance was a subject allowed to perform any exercise or activity before the measurements were taken. Time for relaxation and adjustment to room temperature was provided. The instrument used was the "Leighton Flexometer" and the technic of measurement was that previously reported.[2] Reliabilities of the 30 tests used have been established for measurements taken under these conditions as ranging between 0.94 and 0.99.

Analysis of Data

The means of each skill group were compared with the corresponding means of a group of 16-year-old boys. This technic was used since performance criteria have not been established for skill

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groups and since evidence from a previous study[3] indicated that the performance means of the 16-year-old groups measured provided the most consistent and appropriate norms against which to compare these performance findings. In the above-mentioned study evidence was found that flexibility is an age-level characteristic among boys, and that certain trends in flexibility exist. Evidence also indicated that these trends carry through from age 10 to age 16 years but that they end at this latter age level. The means at this 16-year-old level were also found to be consistent for boys of two different localities. Hence, the means of a 16-year-old California group are used as norms for comparison. Measures of dispersion are not presented inasmuch as they were not felt to be applicable with such small groups. However the measures did group quite closely, nearly all being high when the group was high and nearly all being low when the group was low. In the present study any difference between the means of the 16-year-old

Table 1: Flexibility Means of Specialized Skill Groups and of Sixteen-Year-Old California Boys For Tests Used in Studying Flexibility

Test	16-Yr.-Old	Weight Lifters	Gymnasts	Wrestlers
	M	M	M	M
Neck				
Flexion-extension	123.4	129.6	141.8	130.0
Lateral flexion	88.4	98.0	115.9	111.0
Rotation	158.4	181.0	160.2	151.0
Shoulder, right				
Flexion-extension	257.5	265.0	224.2	214.6
Shoulder, left				
Flexion-extension	257.7	193.0	224.5	217.1
Shoulder, right				
Adduction-abduction	173.2	172.5	190.0	176.1
Shoulder, left				
Adduction-abduction	173.2	163.5	193.6	182.2
Shoulder, right				
Rotation	170.4	188.5	192.5	182.6
Shoulder, left				
Rotation	170.9	186.0	187.6	181.5
Elbow, right				
Flexion-extension	141.1	155.5	152.2	148.3
Elbow, left				
Flexion-extension	142.7	148.2	152.0	148.3
Radial-ulnar, right				
Supination-pronation	161.9	172.6	172.5	166.2
Radial-ulnar, left				
Supination-pronation	161.5	165.4	173.2	163.8
Wrist, right				
Flexion-extension	130.1	131.2	105.9	84.6
Wrist, left				
Flexion-extension	131.7	115.7	95.0	90.0
Wrist, right				
Ulnar-radial flexion	75.5	88.1	74.0	70.0
Wrist, left				
Ulnar-radial flexion	75.9	82.6	73.4	68.3
Hip				
Extension-flexion	55.5	97.2	126.0	108.2
Hip				
Adduction-abduction	63.3	54.2	58.5	52.7
Hip, right				
Rotation	68.6	99.2	71.6	62.6
Hip, left				
Rotation	70.0	98.3	73.9	61.2
Knee, right				
Flexion-extension	136.0	141.5	144.6	132.5
Knee, left				
Flexion-extension	135.9	143.2	142.2	127.2
Ankle, right				
Flexion-extension	62.7	60.2	53.8	51.7
Ankle, left				
Flexion-extension	62.8	64.8	56.7	55.1
Ankle, right				
Inversion-eversion	43.1	63.2	61.2	46.5
Ankle, left				
Inversion-eversion	43.6	65.2	54.8	43.2
Trunk				
Extension-flexion*	78.5	92.3	68.5	76.1
Lateral flexion	95.8	94.9	116.1	104.0
Rotation	128.6	134.5	137.9	129.8

*16-year-old Oregon group mean used for this test comparison as figures not available for California group.

Note: All means are computed in degrees and fractions of degrees. The symbol (°) for degree is omitted since no other unit of measure is used.

California group and those of the specialized skill groups for any test that is equal to or greater than 3 σ measurement (3.00 or $>$ 3 in table 2) of the 16-year-old group is considered as evidence of a specialized high or low performance ability for the specialized skill group.

Findings

Table 1 presents the basic data from which the study is made. Comparisons and interpretations are made from table 2. Table 2 compares the performance of each skill group with the performance of the 16-year-old group in terms of the number of standard errors of measurement by which each skill group exceeded or fell below the performance of the 16-year-old group on each test. Since these values in terms of number of standard errors of measurement are directly comparable between all three groups for any one test, comparison of the performance of weight lifters, for example, on any test can be made with the performance

Table 2: Number of Standard Errors of Measurement Between Means and Direction of These Differences of Specialized Skill Groups Compared with California Group of 16-Year-Old Boys

Test	16 Yr. & Weight Lifters D n σ Meas.	16 Yr. & Gymnasts D n σ Meas.	16 Yr. & Wrestlers D n σ Meas.
Neck			
Flexion-extension	+ 3.32*	+ 9.82*	+ 3.53*
Lateral flexion	+ 3.67*	+ 10.50*	+ 8.66*
Rotation	+ 6.57*	+ 0.52	— 2.15
Shoulder, right			
Flexion-extension	— 21.80*	— 13.80*	— 17.80*
Shoulder, left			
Flexion-extension	— 20.50*	— 10.56*	— 12.90*
Shoulder, right			
Adduction-abduction	— 0.28	+ 6.72*	+ 1.16
Shoulder, left			
Adduction-abduction	— 7.64*	+ 16.06*	+ 7.08*
Shoulder, right			
Rotation	+ 5.79*	+ 7.06*	+ 3.89*
Shoulder, left			
Rotation	+ 7.06*	+ 7.81*	+ 4.95*
Elbow, right			
Flexion-extension	+ 8.51*	+ 6.57*	+ 4.26*
Elbow, left			
Flexion-extension	+ 5.14*	+ 8.68*	+ 5.22*
Radial-ulnar, right			
Supination-pronation	+ 3.99*	+ 3.96*	+ 1.60
Radial-ulnar, left			
Supination-pronation	+ 1.48	+ 4.45*	+ 0.87
Wrist, right			
Flexion-extension	+ 0.33	— 7.16*	— 13.45*
Wrist, left			
Flexion-extension	— 6.64*	— 15.20*	— 17.29*
Wrist, right			
Ulnar-radial flexion	+ 7.33*	— 0.87	— 3.20*
Wrist, left			
Ulnar-radial flexion	+ 2.76	— 1.03	— 3.14*
Hip			
Extension-flexion	+ 14.80*	+ 25.28*	+ 18.73*
Hip			
Adduction-abduction	— 4.72*	— 2.48	— 5.50*
Hip, right			
Rotation	+ 13.18*	+ 1.29	— 2.60
Hip, left			
Rotation	+ 9.24*	+ 1.27	— 2.87
Knee, right			
Flexion-extension	+ 2.27	+ 3.55*	— 1.44
Knee, left			
Flexion-extension	+ 2.21	+ 1.91	— 2.63
Ankle, right			
Flexion-extension	— 1.58	— 5.63*	— 6.97*
Ankle, left			
Flexion-extension	+ 0.68	— 2.04	— 2.57
Ankle, right			
Inversion-eversion	+ 8.44*	+ 7.60*	+ 1.43
Ankle, left			
Inversion-eversion	+ 8.28*	+ 4.29*	— 0.15
Trunk			
Extension-flexion†	+ 7.71*	— 5.58*	— 1.34
Lateral flexion	— 0.18	+ 2.94	+ 1.68
Rotation	+ 1.95	+ 3.68*	+ 0.40

*Values significant at the criterion established.

†16-year-old Oregon group mean used for this test comparison as figures not available for California group.

D = Direction of deviation from 16-year-old mean.

of gymnasts and wrestlers on the same test. The positive and negative signs indicate where the sport groups exceed or are not equal to the performance of the 16-year-olds.

Of the groups here reported, weight lifters and gymnasts showed the highest flexibility performance ability. Each group exceeded the 16-year-old group on 15 of the 30 tests. These were not, however, on the same tests in all cases. The weight lifters showed inferior ability on 5 tests and the gymnasts on 6. These findings might be considered somewhat surprising in that popular opinion has considered gymnasts as being quite flexible while considering weight lifters as being quite restricted or "musclebound." The evidence does not bear out this popular opinion.

Wrestlers showed quite a different pattern of flexibility performance ability from those of the weight lifters and gymnasts. They showed superior performance ability in only 8 of the 30 movements as against 15 for both the weight lifters and gymnasts.

These data present evidence supporting my previous findings that significant differences exist between the means of characteristics of specialization in flexibility performance ability among skilled performers specializing in different activities. Of the groups studied, only the weight lifters showed superior performance ability in neck movements that aid in extending peripheral vision. This is apparently not a factor for these specialized skill groups as it was for swimmers, baseball players, basketball players, and track men. All groups showed low ability in shoulder flexion and extension. Ability in shoulder movements that have to do with rotation was high. In arm movements that involve the elbow and forearm, ability varied from specialized ability to approximately that of the 16-year-old group. In wrist movements, ability varied from approximately that of the 16-year-old group to low specialized ability performance. Highly specialized performance was noted in hip flexion and extension for all groups. In all ankle and trunk movements, these groups varied as groups through high performance specialization, no specialization, and low performance specialization.

These findings support my previous findings that the number and kind of specialized flexibility performance abilities vary significantly among the different specialized skill groups, and that these variations do not occur for all movements nor for the same movements among the different special skill groups. It also implies that our knowledge concerning the effects of the training required for these sports is quite limited and often biased. Apparently the field of bodily flexibility has hardly been scratched. An extensive research program is needed.

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OUT OF A hoped-for budget of $3,500,000, the National Multiple Sclerosis Society plans to allocate $510,000 for research in 1957. The Society estimates that there are 250,000 patients who have MS and another 250,000 who suffer from diseases probably related to MS and which are included in their research interest. The NMSC has reported that laboratory tests have been begun which, it is hoped, will confirm reports that the cause of multiple sclerosis has been found. Researchers in several institutions will attempt to verify the recently reported findings of Miss Rose R. Ichelson, Philadelphia bacteriologist, who has isolated a spirochetal organism from spinal fluid of multiple sclerosis patients. Miss Ichelson believes this spirochete to be the cause of the disease.

Muscular Strength-Endurance Relationships

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This report will present a number of muscular strength-endurance relationships. Supporting evidence will be drawn largely from my own studies or those conducted under my direction.

For definitions, the following will apply. Muscular strength is the amount of tension a muscle can apply in a single maximum contraction. Two types of muscular endurance are recognized: *isotonic* muscular endurance is the ability of the muscle to maintain maximum contraction; *isometric* muscular endurance is the ability of the muscle to continue moving a submaximal load. The research reported herein is confined to the latter form of muscular endurance unless otherwise stated.

First Relationship: The amount of resistance required to induce muscular exhaustion in a relatively short time varies among individuals, depending on the strength of the muscles primarily involved. The amount of resistance for each subject may be determined as a proportion of that strength.

In studying methods for single-bout ergographic fatigue testing,[1] consistent results could only be achieved when ergograph loads were such as to induce exhaustion in a relatively short time, not exceeding approximately two minutes. An identical load could not be used for all subjects in such testing if repeatable results were to be obtained. Thus, it became necessary to adapt the amount of the load for each individual. The method found to be effective in determining this amount was to take a proportion of the strength of the muscles to be exercised. In initial ergographic endurance testing of the elbow flexor muscles, a load equal to three-eighths proportion of the strength of these muscles, cadence of 30 repetitions per minute, resulted in a test-retest correlation of 0.85.

Second Relationship: The work output of muscles in exhaustion performances is greater when they are in position to apply greatest tension at the point of greatest stress.

The strongest position for the application of the maximum strength of the elbow flexor muscles is with the forearm midway in the range of motion of the elbow joint, between 100 and 140 degrees.[2] A decrease of approximately 28 per cent in the ability of these muscles to apply tension occurs when the forearm is fully extended at 180 degrees. Consequently, as exhaustion is approached in elbow flexion ergographic exercise, the elbow is forced into extension, a relatively weak position. Furthermore, each movement made in raising the load is initiated from this same weak position. When shoulder flexion ergography is performed, however, a five-eighths proportion of the strength of these muscles is required for effective results. The explanation of this difference is that, in this movement, greatest strength is achieved with the arm parallel to the body. Thus, the joint is in its strongest position at the point of exhaustion in shoulder flexion ergography and each ergographic movement is started from this strong position.

Third Relationship: The speed of muscular contraction affects muscular endurance performance. There appears to be a specific combination of load and cadence which produces maximum work output of each muscle group.

For both the elbow flexion and the shoulder flexion ergographic studies mentioned previously, effective loads only for the ergograph were identified. In doing so, the cadence, or speed of muscular contraction, was constant at 60, or 30 repetitions per minute. Recent unpublished studies on grip and elbow flexion ergography have examined the combination of load and cadence that would result in the greatest work output. The work output in each instance was computed as the product of load in grams and distance in centimeters the

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load was raised cumulatively. A time limit of two minutes was placed on all such bouts. For each muscle group, 25 combinations of work and cadence were tested. A definite combination was found to produce the greatest work output for each muscle group. These were one-half proportion at 76 cadence for the grip muscles[3] and one-fourth proportion at 76 cadence for the elbow flexor muscles.[4] Whether the cadence of 76 has any general significance needs further investigation.

Fourth Relationship: Individuals with greatest muscular strength have greatest absolute endurance; however, stronger muscles tend to maintain a smaller proportion of maximum strength than do weaker muscles.

Tuttle and associates utilized dynamometers based on the strain gage principle for measuring the maximum strength and endurance of the back and leg[5] and grip[6] muscles. Two isotonic strength endurance indices were obtained: an absolute index, as the total area of contractile curve maintained for a specified time; and a relative index, as the average strength maintained for the given time. They found that the correlation between maximum strength and the absolute strength endurance index was 0.90, and between maximum strength and the relative index was — 0.40 and — 0.48 for back and leg muscles respectively. A similar negative correlation (—0.38) between the strength of the elbow flexor muscles and their ergographic work output (relative isometric endurance) was obtained by Irish.[4]

Fifth Relationship: An immediate effect of fatiguing muscles is to reduce their ability to apply tension. The amount of this decrement is an indicator of the degree of muscle fatigue.

When the strength-decrement effect on fatigued muscles was studied, the elbow flexor muscles of the left arm were exercised to exhaustion on the ergograph.[7, 8] The ergographic weight loads were equal to three-eighths proportion of each subject's elbow flexor strength, and cadence was 60, or 30 repetitions, per minute. The approximate strength decrements following this exercise for conditioned subjects (college men) were 29 to 33 per cent at 30 seconds, 18 to 20 per cent at 2½ minutes, 8 to 11 per cent at 12½ minutes, and 4 to 5 per cent at 42½ minutes. In an ergographic study in progress by Pastor,[9] it is evident that some strength loss occurs very early in fatiguing exercise.

Sixth Relationship: Strength recovery rates resulting from muscular fatigue are increased by muscle condition and by general body movement following exercise.

In the strength decrement studies,[7] no difference was found in the percentage strength loss 30 seconds after exercise for conditioned and unconditioned subjects. However, the recovery rate was more rapid for the conditioned subjects. Furthermore, for conditioned subjects, the strength recovery at the end of 42½ minutes was greater when the subjects moved about between post-exercise strength tests, thus increasing general body circulation, than when they were supine between these tests — recovery to 4-5 per cent below pre-exercise strength means as contrasted with 10 per cent.

Seventh Relationship: Muscular fatigue patterns from strenuous total-body activity can be revealed by the strength decrements of individual muscle groups.

The strength decrements of various muscle groups have been utilized in determining muscular fatigue patterns resulting from pack-carrying military marches and from 200-yard time trials in crawl-stroke swimming. In one of the pack-carrying studies,[10] the strength losses of eleven muscle groups were tested at the end of each 2.5 miles of 7.5 mile marches under field conditions. For each of six marches, such factors as the type of pack, the location of the pack on the body, and the weight of the load carried were varied. A different pattern of muscle groups had strength decrements for the different packs and for changes in the location on the body of the same pack. The degree of fatigue in individual muscle groups was revealed by the amount of this strength loss. Similar results were obtained in determining the fatigue of the muscles of the lower leg and ankle from wearing different

military boots and shoes on a standard pack-carrying march,[11] and also when determining the strength decrement of the major muscle groups involved in swimming 200-yards for time.[12]

Eighth Relationship: The strength decrement of involved muscle groups may be used to determine total-body muscular fatigue resulting from strenuous activity, and may serve as a criterion for evaluating the effects of such activity on the body as a whole.

When the 41-pound combat load of the infantry rifleman was carried on 7.5-mile marches, the total strength decrement of all muscle groups tested was approximately the same when the pack was carried high or low on the back, although the pattern of affected muscle groups differed. The relationships between the strength losses of muscles from carrying a rucksack with 61-pound load on such a march and various motor-physical fitness tests[13] were determined.[14] The highest multiple correlation obtained was —0.92 between strength loss and the Rogers Strength Index. Comparable correlations with the Army, Navy, and Army Air Forces motor fitness tests were between —0.49 and —0.57.

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Trends in Medical Education

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One cannot pretend to see what the future holds in medical education because extrapolation of history is all too often faulty. Nevertheless, it is clear that we have come a long way in American medical education since the first medical school in the country opened its doors at Pennsylvania in 1765.

During those times a man attended some lectures if they were available or simply "read" medicine with an established doctor. Thus, my great uncle James read medicine with his mother's brother. However, by the time my father was ready to study medicine in the 1880's, times had changed and he took a three-year course at the University of Pennsylvania, followed by over two years of hospital work.

The young physician then requested letters of introduction to the profession from several of his professors. These he took with him when he went to the location he selected for practice to present when he called upon his fellow practitioners. These were days of highly didactic teaching, when one was expected to learn a large quantity of precise information, and when examinations were designed to elicit particular answers.

Dr. Joseph Stokes, father of our Professor of Pediatrics who practiced in New Jersey for many years, is credited with having completed his medical course at the University of Pennsylvania with an average of 100 in all of his final examinations; and a few others made a record above 99. Times have changed in the examination system, and we even have faculty members who think that we should not give examinations at all.

It appears that up until the middle 20's of the present century, the trend in medical education was toward greater and greater specialization among teachers. In the original medical school at the University of Pennsylvania there were but four professors. There are now 85 full professors in the medical school and a slightly smaller number, 83, in the graduate school of medicine, supported by a total faculty which for the two schools numbers 1,746.

With this increase in the teaching establishment, which has been engendered to a large extent with the objective of doing research, we have come to have an increasing compartmentalization of knowledge. Thus, we have one department to study physiological reactions and another department to study these reactions as influenced by drugs. It is inevitable that both departments use drugs and that both departments study physiological reactions. We have a third department focusing on biochemistry, and it is inevitable that both pharmacology and physiology depend upon and utilize biochemical technics to a substantial degree.

The effects of this compartmentalization have been two. The first effect was to teach students highly technical information with relatively little relationship to the field of medicine as a whole. This was perhaps especially true in biochemistry. There was some belief that technical courses produced an unfeeling scientist whole sole interest in his patients was their chemical reactions, although personally I have yet to meet such an individual. The other effect of compartmentalization was that one faculty member ceased to know very much about what another faculty member was teaching. It often happened that faculty members' interests crossed so that they expanded their interests into each others' fields. The net result of this was that students were often taught the same material twice or even three times with relatively little change in viewpoint.

These various considerations have led to an increasing emphasis on integration during the past 20 years. In the basic science area, Dr. Julius Comroe and his

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colleagues on Dr. Piersol's faculty have played a leading role. They have developed an integrated course in the preclinical medical sciences, in which a given subject, such as the urinary tract, is discussed by a representative from each discipline. Thus, one professor would be likely to lecture on the anatomy and histology of the kidney, another on its physiology, possibly a third on its response to drugs, a fourth on biochemical considerations, or these might be combined with the study of its physiology. The next lecturer would be a pathologist, who would probably cover the pathologic changes and their classifications, and perhaps also cover bacteriology as it affects the urinary tract.

Efforts at correlation are being made in many medical schools, probably in all. In the medical course leading to the M.D. degree at the University of Pennsylvania, we start in the first year with a series of clinics in which the students see patients who illustrate the value of the type of information they are currently studying. Thus, when studying osteology, they would be shown fracture patients. When studying biochemistry, they would be shown patients who would present problems in water and electrolyte balance, and so forth.

In the second year this process continues with a broader group of lectures, emphasizing pathology and bacteriology. In the second year the students also begin to learn physical diagnosis. A definite effort is made to keep the clinical teachers aware of the progress of the courses which the first and second year students are taking in the preclinical sciences. Thus, in the first two years, when the emphasis is on preclinical study, effort is made to correlate the information gained and studies carried on with the requirements of clinical practice.

In the third year the students spend most of their time in the wards, and in the fourth year, in the outpatient departments. Particularly in the fourth year, we have established what might be called retrograde correlation, and a major effort is made to reach back into subject matter of the first and the second years. A weekly topic is assigned, and each week four students divide up the topic, discussing its preclinical aspects as well as its clinical aspects for an hour early in the week. Every student in the class is then given an illustrative case, presenting a problem, and is required to write a discussion of how he would handle the problem. At the end of the week three to five faculty members, representing the preclinical as well as the clinical subjects, tackle the subject for two hours, reviewing the student presentations, expanding the information presented by the students, and then entering into a detailed discussion of the management of the case assigned, with opportunity for questions and discussion by any member of the class and interchange of opinion among members of the faculty panel.

In some schools the pendulum has swung further back from segregation of subject material to integration of subject material, so that the students actually start out with patients and learn their preclinical subjects in conjunction with them.

One of the phenomena which are most striking in education generally and in medical education particularly is the high valuation put on novelty. It is not always necessary that a program be entirely new but merely that it has not been much used in the recent past. Sometimes a new program is so popular as to constitute a fad. Thus, if one person comes up with a seemingly new idea and another person adopts some variation of it, we may see a bandwagon phenomenon with one school after another jumping onto it.

What is a rational and sane view to take? When one considers all the labor that went into the differentiation of medical subject matter into fields of related information which could be effectively handled by individuals, and when one thinks how productive this differentiation has been in terms of research and new knowledge, it seems quite clear that we do not wish to carry integration all the way back to having the student start with the patient as a whole, as my great uncle must have done in the office of his maternal uncle. Rather we must preserve the advantages of differentiation and at the same time provide a curriculum that provides some awareness of clin-

ical problems in the earlier years and review of preclinical problems in the later years.

The eagerness with which educators seek after novelty is probably not an idle phenomenon. There is something about a new idea and a new situation which can be very stimulating to students. This is encountered with a great intensity in certain situations in which a new school is started by a strong faculty. If one goes back over the roster of the first class to be graduated from Johns Hopkins Medical School or the first class to be graduated from Bryn Mawr College, one is astonished to see how many of these individuals have made a real mark in life. Dr. Gilbert White, while President of Haverford College, made the remark that he had observed that it was very profitable for students to be aware of and concerned about the methods by which they were being educated.

I am convinced that this is true, both at the college level and at the medical school level, and very likely at all levels beyond the earliest years. A tool that has been used with good effect to stimulate this interest is the student questionnaire covering points about curriculum and points about instructors. We have used this extensively in medical school teaching. Such questionnaires are ostensibly and also actually a checkup on faculty members and how they teach, but also they serve this other important purpose. We have used such surveys for a number of years and have found that, frequently, succeeding classes reverse themselves both in their opinion of individuals and in what they want in the way of curriculum. Thus, when certain curricular changes have been made at the behest of one group of students, voices equally strong find two years later that a succeeding group of students voices equally strong reasons for the course or method of presentation against which the earlier students protested.

Dean David of the Harvard School of Business Administration remarked some years ago at a conference on professional education that it was the function of leadership constantly to restate the objectives of the group in terms that would have fresh meaning for its members. A teacher should exert this form of leadership for his class group to as large a degree as possible. Dean David also said that he took the point of view that a newly prepared lecture was good, that it generally required extensive revision if it were to be used a second year, and that by the third year it should be considered completely out of date. However, in order to prevent his faculty from using former lectures, he had found it necessary to reassign courses with great frequency, so that new lectures would have to be written every few years.

Personally, I feel this is rather an extreme position, but it is in happy contrast to the legend about Munro Tertius. You will recall that the Munros were a family of anatomists. It was Munro Primus, I believe, who described the foramen of Munro, and he was succeeded in the chair in due course by Munro Secundus and Munro Tertius. One time, late in the career of Munro Tertius, he became ill and had to leave the lecture room suddenly, whereupon his students found his notes on the lectern and determined that he was still using the notes of Munro Primus, who had prepared the lecture two generations earlier.

We have one other area in medical education which has deserved and received a good deal of attention. This concerns thinking of the patient as a whole. It involves considerations of his personality and of his economic and social setting. Through the 20's and 30's, medical schools have left this to a large extent to the hospital experience, although students get a considerable amount of instruction of this type by association with their instructors during the clinical years. In the days when it was common to operate home obstetrical services with students going out to carry out normal deliveries, this experience afforded an opportunity in this field.

Since then various home care programs have been started, involving students. At our school, provision is made for some men to go out between the third and fourth year to work as preceptees with general practitioners of known excellence. Our medical social service department has been drawn into certain clinics for teaching of the third and fourth

year students, in which emphasis is put on social needs and community resources. Departments of psychiatry have focused further attention on the bearing of personality problems on physical illness. At the University of Pennsylvania, Dean John Mitchell has made provision for a large number of our students during their first year to assume a relationship with a family in which chronic illness exists. They maintain this relationship through all four years of their medical course. They are known as "family health advisors." They are not represented as physicians and do not function as physicians. They do assist the family in bringing their medical problems to the various services of the outpatient department, and they follow the patients throughout the hospital, whether they come for diagnostic studies, medical treatment, or operation. The families have been carefully selected, and this has been a rich experience for many of the students and one for which the families participating have been very grateful also.

Finally, I come to the problems of the postmedical-school phase of medical education. In many countries where scientific advances have been more recently adapted into the fabric of the civilization, the law is much more specific regarding who can do what in the medical field. Thus, in Iraq, a man cannot practice ophthalmology unless he is certified in ophthalmology, or practice surgery, unless certified in surgery, and so forth.

It seems not unlikely that the laws in this country will eventually be revised to insist upon some form of government authorized examination for individuals representing themselves as specialists. This would supplant the present, somewhat haphazard arrangement under which surgery, for instance, is practiced by individuals of all levels of training beyond the M.D. degree who have acquired experience of almost any sort.

Perhaps nowhere in medicine is this problem more serious than in the field of physical medicine and rehabilitation. Physical medicine involves numerous technics that are scarcely more than alluded to in the average medical school course or during internship. The modalities commonly employed involve the use of strong and potentially dangerous forces, and clearly require special training and knowledge for their proper application. As in surgery, however, until the number of trained practitioners is sufficient to meet the load, it is inevitable that much of the work will be carried by individuals with less formal training who have through necessity or desire acquired a fair amount of practical experience.

During the second quarter of this century, we have witnessed a tremendous increase in clinical specialization. To meet this need, a number of schools of medicine for graduate physicians came into existence. To the degree possible, these schools have integrated their efforts with residency programs for clinical training. They have provided a fair degree of preparation for doctors going into specialties. With the growth of the residency system, however, most of them have fallen by the wayside, and only the strongest have survived. Advanced medical education at this level is now at a crossroads. The residency programs of those hospitals directly connected with a medical school and staffed by medical teachers have been filled to capacity, and the capacity has been increased in some areas slightly beyond the optimum limit. In other words, the number of residents in some of the teaching hospitals has been increased so far that they get somewhat in each other's way.

This still seems inadequate to meet the need, and we appear to be faced with two choices. Either the good, nonteaching, general hospitals will endeavor to acquire enough preclinical and clinical teachers to supplement their residency training with advanced courses in the preclinical sciences, or they will make arrangements with a medical teaching organization to provide their residents with this opportunity on a rotating basis.

It is difficult to believe that the independent, nonteaching hospitals can really do an adequate job in this field. It is also doubtful whether even the teaching hospitals will provide enough formal instruction in the preclinical fields without a definite course organization for their residents. It appears, therefore, that for a fairly broad group of specialists, ad-

vanced instruction in various of the preclinical sciences, as it affects their specialty, is advantageous and necessary for the training of the best men entering the field.

Here, the opportunities for integrated teaching are very great. Each student having been through medical school should have a fair background in anatomy, histology, biochemistry, pharmacology, physiology, pathology, and microbiology. It appears to be ideal for such men to have subject matter presented system by system with lecturers from each of these fields. Undoubtedly, there should be increased correlation with subjects that are generally taught before a student enters medical school, such as physics and organic chemistry.

The possibilities of helpful degrees of integration between the college curriculum and the medical school curriculum have not been adequately explored. Some steps are being taken in this direction, but the great advantage of making it possible for students to switch from one institution to another, between college and medical school, makes it highly desirable to divide college subjects from medical subjects on a uniform basis and, therefore, it is difficult to experiment.

Medical education is far from static. New subject matter developed by current research makes the best medical education out of date in a decade or so. Strong trends toward specialization of faculty members are somewhat in conflict with the need for teaching students an integrated body of medical knowledge. Many expedients are being tried to overcome this difficulty, but it seems important not to lose old values for the sake of novelty alone.

The role of course work during the years of specialization beyond the M.D. degree has been deprecated by some medical educators. However, it seems doubtful that the many hospitals now required for residency training in the specialties can all mount first class teaching programs any more than the large number of independent medical schools that Flexner encountered at the beginning of this century were able to do so.

For doctors taking training in the clinical specialties, as for those preparing themselves in the preclinical specialties, some advanced courses would seem desirable — not as a substitute for residency experience, but as a complement to it.

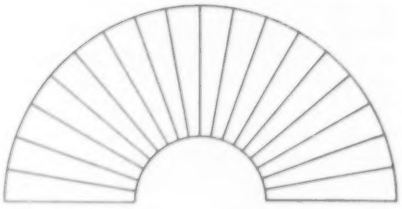
SUCCESS IS THE KEYNOTE

of our Philadelphia — 1958 meeting! An interesting scientific exhibit will contribute much to our success. In addition to the tremendous value of these exhibits, YOU have the opportunity to be considered for one of the coveted awards. Requests for applications for scientific exhibit space in connection with the 36th annual session scheduled for August 24-29, 1958, Hotel Bellevue-Stratford, Philadelphia, are now being received. Official blanks will be mailed after January 1, 1958. Address all communications to the American Congress of Physical Medicine and Rehabilitation, 30 N. Michigan Ave., Chicago 2, Illinois.

New Apparatus: A Device for Measuring Rotation of the Neck

Minerva W. Cheshire
Wichita, Kansas

A semicircular clear plastic piece with a cut-out for the neck proves very helpful in measuring the degrees of neck rotation. Identical cut-outs of paper marked with radiating lines showing degree of rotation are clipped to the plastic. To measure, mark the center of the chin with a skin pencil and have the patient rotate the head to right and left. A mark is made on the paper at each extreme and dated.



Psychologically, it is good for both the patient and the therapist to visualize the progress from time to time. At discharge the paper is enclosed with the summary in the patient's folder and, in succeeding months, if the patient has a recurrence of his disability, the record shows the patient's loss or gain since his discharge.

From Department of Physical Medicine and Rehabilitation, VA Center.

WHAT?

36th Annual Session of the American Congress of Physical Medicine and Rehabilitation —

WHEN?

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book reviews

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AIDS TO ORTHOPAEDIC SURGERY AND FRACTURES. By *William Waugh*, M.A. Fourth edition. Cloth. Price, $3.50. Pp. 296. Williams and Wilkins, Mt. Royal and Guilford Aves., Baltimore 2, 1956.

In order to bring the subject matter up to date and in line with present developments the author has completely revised and very largely rewritten the previous edition (third, 1950) by I. E. Zieve. It retains the outline style which makes it a convenient reference.

It has not been the purpose of this concise handbook to be a substitute for standard textbooks, but rather to give an outline of the special field of orthopedics in a simple and convenient form which will make it useful in conjunction with clinical teaching and lectures and also as a basis for wider reading. The contents have been divided into two parts: Part I includes the same list of topics under the heading of "orthopaedic surgery" as in the third edition. Part II is a new and separate section of three chapters covering fractures, dislocations, and injuries to soft tissues. In Part II there are many additions as well as more details on conditions previously included. It is of interest that the subsection on fibrositis has been dropped from this edition.

This book should prove most useful to students when they are attending orthopedic rounds or out-patient clinics as well as when they are reviewing for examinations.

KURVEN UND TABELLEN FUR DIE STRAHLENTHERAPIE. By Doctors *Felix Wachsmann* and *Alexander Dimotsis*. Cloth. Price, 28 DM. Pp. 184, with illustrations. S. Hirzel Verlag, Stuttgart, Germany, 1957.

This book is a collection of quantitative information, in the form of tables and graphs, for the use of radiologists, especially in radiation therapy. The preface in German is followed by translations of the same in English, French, and Spanish, and all of the contents of the book, including even the indexes, are given explicitly in all four languages. A general section contains tables of the chemical elements, of the vibrations and radiations used in medicine, of ranges of particles, and of ionization densities and mean energies. This is followed by sections on dosimetry, on surface and depth doses, on radium and radioactive isotopes, and on biological effects. This last includes important data on skin tolerance doses, on the influence of the radiation quality on the erythema dose, and on the factors that must be used in interrupted or protracted treatment in order to obtain the same biological reaction. The book will be an essential item in every library used by radiologists and biophysicists. It will also be valuable to translators of technical literature because of the remarkable collection of definitions in four languages on pp. 30-31 and because so many of the words thus defined are used in illuminating context elsewhere in the book. The preparation of this book required the most exacting and critical kind of scientific scholarship followed by equally fine work on the part of three linguists, Wall, Herve, and Belloch. It deserves praise as a contribution to science and as an inspiring instance of scholarly cooperation.

HANDBOOK OF POLIOMYELITIS. By *Joseph Truetta*, M.D.; *A. B. Kinnier Wilson*, and *Margaret Agerholm*. Cloth. Price, $3.75. Pp. 139, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

This book from the University of Oxford is based on the experiences of the authors at the Poliomyelitis Centre of the Hendon Infectious Diseases Hospital and the Royal National Orthopaedic Hospital at Stanmore, Middlesex, as well as at the Nuffield Orthopaedic Centre at Oxford.

The authors present most of the up-to-date and relevant information on poliomyelitis, including historical, epidemiologic, laboratory and chemical aspects. The most detailed and complete sections are concerned with the care of the patient in the acute and early convalescent stages of the disease, with particular emphasis on the management of bulbar and respiratory problems. Careful descriptions of proper technics for postural drainage in bulbar poliomyelitis are given. The respirators described and pictured are not commonly used in this country; however, the principles which they embody are the same. The medical management of the patient in the respirator, as well as the problems involved in ac-

climating the patient to existence without the machine, are well described.

The treatment, and particularly the physical therapy applied in the recovery stage, is well described. Basically it follows the careful technics for muscle re-education used in this country. Perhaps the most disappointing part of the book is the section on the management of the permanent disabilities. The author writes that within the limited scope permitted him he is merely outlining some of the procedures that can be used, and he discusses in a rather superficial manner possible surgical approaches to some of the deformities. A few pictures of assistive devices are given, but there is little material on the bracing and training of the severely handicapped patient.

The book is easy to read, and is written in the usual concise, clear style which we come to appreciate in many of the English medical writers. We all can agree with the author in his statement in the introduction that, "perhaps the happy time is not far distant when such a contribution [a book on poliomyelitis] will have, if anything, only historical interest."

PHYSIKALISCHES PRAKTIKUM FUR STUDIERENDE DER MEDIZIN. By *Alfred Rau* and *Gunter Schumann*. Cloth. Price, 18.95 DM. Pp. 216, with illustrations. Georg Thieme, Leipzig C 1, Germany, 1956.

Rau and Schumann present a systematic collection of experiments in physics at a level which would correspond, in the United States, to a college course for premedical students. There are 15 experiments in mechanics (including the determination of velocity of ultrasound in a liquid), 7 on heat and calorimetry, 8 on optics including the photocell, and 14 on electricity, magnetism, and ionizing radiation. The last section includes experiments on the self-induction of a coil, thermionic amplifiers, resistance thermometers, thermistors, roentgen rays, and the Geiger-Müller counter.

The book differs from what an American student would bring with him to the laboratory. It is bound for home-study rather than for hard use among instruments and reagents, and it lacks the detailed lists of apparatus and instructions as to procedure expected by American students. The notations of trigonometry and differential calculus are used freely, perhaps unnecessarily. The authors have evidently done their best to meet a dilemma faced by most European universities, which simply lack the means to give the desired laboratory experience to the increasing numbers of medical and premedical students. That the resulting overemphasis on reading, demonstrations by instructors, and mathematical exercises is recognized as frustrating by the students was recently brought out by an article headed "We Are Not Learning Anything" in an Italian periodical. The tendency to neglect or curtail laboratory facilities for medical students is occasionally manifested in American schools; it should not be permitted to go too far. In the meantime, this book should be studied by teachers here as a model of precise writing and careful selection of materials.

CLUES IN THE DIAGNOSIS AND TREATMENT OF HEART DISEASE. Second edition. By *Paul D. White*, M.D. Cloth. Price, $5.50. Pp. 190, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1956.

This is the second edition of a useful small book on heart disease written for the general practitioner. The first edition was published in 1955. The author is a famous cardiologist who has made many contributions to the field of heart disease.

The purpose of the book is to aid the general practitioner in better interpretation of the clinical signs and symptoms of the usual forms of diseases of the heart. The thirteen chapters cover important points concerning the history, clinical examination, electrocardiogram, and roentgenograms, and there is a short chapter on therapy. The author stresses the need for the physician to take the history carefully and completely, especially in the matter of antecedent events which may hold important diagnostic clues.

The final chapter deals with all standard forms of medical treatment. No mention is made of the use of surgical treatment of anticoagulants in diseases of the heart. However, the book fulfills its purpose by providing simple and concise descriptions of clinical findings and features of the more common forms of heart disease.

MEDICAL RESEARCH. A Midcentury Survey. Vol. 1. American Medical Research: In Principle and Practice. Vol. 2. Unsolved Clinical Problems: In Biological Perspective. Paper. Price, $15.00. Pp. 765 (Vol. 1) and 740 (Vol. 2). Little, Brown and Company, 34 Beacon St., Boston 6, 1955.

This two-volume edition, a comprehensive survey of the entire field of medical research in biological perspective, is the culmination of a 15-year study by the American Foundation, a research organization in New York established in 1924. The report is an encyclopedic synthesis of information gathered from many sources. The main thesis for these two volumes is the significance of basic research for medical progress.

In the first volume medical research is considered in the perspective of biology, chemistry, physics, and mathematics. Current trends and current problems in medical and biological research in the United States are presented, incorporating concepts, conditions,

trends, role of government and its relation with science, and social influences. In discussing research agencies, specific examples illustrated are the research institutes in universities, medical schools, foundations, independent organizations, government, industry, and group clinics. Finally, the use, control, and publication of the products of medical research are discussed.

The second volume presents an introductory chapter outlining the major biologic and metabolic concepts that are essential to understanding the normal mechanisms operating in health and the disturbed mechanisms that constitute disease. Following are discussions of nine unsolved problems of clinical medicine: cancer, infertility, arteriosclerosis, hypertension, rheumatic syndromes, tuberculosis, viruses, chronic alcoholism, and schizophrenia. Each problem is thoroughly explored, including background, current state, and anticipations of the future.

The wealth of information, depth of comprehension, and clarity of exposition make this book a pleasure to read as well as a landmark in biological research of medical importance. It is highly recommended to anyone concerned with medical research, whether he be student, administrator, educator, or investigator.

physical medicine abstracts

Chloroquine and Rheumatoid Arthritis. A. Freedman. Ann. Rheumat. Dis. **15**:251 (Sept.) 1956.

The author reports on a 16-week period of observation of 69 patients presenting acute rheumatoid involvement of four or more joints. Thirty-four received 200 to 300 mg. of Chloroquine daily, alternating with 35 who received placebos. All 69 received 40 grains of aspirin and 200 mg. of ascorbic acid daily. In addition, those showing anemia received oral iron. Weight, hemoglobin, ESR, hand grip, joint tenderness, and liver function were checked regularly. A numerical system of grading joint tenderness, hand grip and lacing time was devised for follow-up. The Chloroquine group appeared to be of more recent onset and have more active disease than the control group in spite of random sampling. By the system of measuring, the control group did not show significant improvement, whereas the treated group showed small but significant gains. Observations then were continued over a period of two years and significant improvement continued in the group receiving Chloroquine, whereas the untreated group did not show significant gains. No serious toxicity was noted, although drugs of this type (notably Mepacrine) have been associated with aplastic anemia and death elsewhere, as well as with other side effects and allergic reactions. The 16-week period used appears to be too short and the sample (69) too small for conclusive demonstration of effect or lack of effect of this drug in rheumatoid arthritis. As the author states, this drug should have the benefit of larger trials over a longer period to determine its value in rheumatoid disease.

Early Recognition of Rheumatoid Disease with Comments on Treatment. Robert D. Gauchat, and Charles D. May. Pediatrics **19**:672 (Apr.) 1957.

The major clinical signs and symptoms of rheumatoid arthritis in children are summarized. Because it is a generalized systemic disease the authors advocate the use of "rheumatoid disease" rather than "rheumatoid arthritis." They list major manifestations as fever, abrupt in onset, high, spiking to 40-41.2 C. (104-106.5 F.) with profuse sweating, abdominal pain, and voluntary reduction of physical activity. The fever is only slightly affected by salicylates, and not at all by antibiotics; 75-80 per cent of these children show a fleeting, recurrent, maculopapular, salmon pink rash over trunk, face, and extremities which appears during febrile episodes. Transitory migratory arthralgia without redness, heat, swelling or tenderness appears early. Pericarditis, myocarditis, and endocarditis are not infrequent. The authors state that acute carditis accounts for a high proportion of deaths from the disease, even though the cardiac changes tend to disappear gradually and completely in those who survive. Pleuritis and pneumonitis with intense pain, nonproductive cough, especially over lower lobes, but without striking roentgen

changes tend to persist for months and resolve slowly. Acute abdominal pain, possibly mesenteric adenitis, may suggest acute appendicitis. Other manifestations are encephalitic, ophthalmologic, but early subcutaneous nodules or hemorrhagic manifestations are rare. They point out that diagnostic tests are of less help than one would like. They suggest several therapeutic routines stressing the use of minimal effective doses of each. Finally, they point out that the opinion that the disease "burns itself out" in five years or less is erroneous, since it may continue in an active phase for 20 years or longer and may recur after remission lasting as long as 30 years.

Primary Instability of Lumbar Vertebrae as a Common Cause of Low Back Pain. F. P. Morgan, and T. King. J. Bone & Joint Surg. **39-B**:6 (Feb.) 1957.

The authors feel that so-called "primary" instability of the lumbar vertebrae is the commonest cause of low back pain. This instability is due to incomplete rupture of the annulus fibrosis due to slits and tears. Diagnosis is made only after oblique radiographs have ruled out any defect in the neural arches. Lateral views of the lumbar spine in flexion and extension with the patient sitting are examined for anterio-posterior sliding of the lumbar vertebrae. Lumbar instability is seen most frequently between L4-5 and is present before narrowing of the disc space, sclerosis of the epiphyseal rings or osteophyte formation is evident. The authors report on 500 consecutive cases of low back pain in which the diagnosis of primary lumbar instability was made in 28.6 per cent of the cases. No statistical breakdown of the treatment was given except to note that 17 of these cases were brought to surgery for spinal fusion. Conservation therapy consisted of rest and bracing.

Bankart's Operation for Recurrent Dislocation of the Shoulder. J. W. Dickson, and M. B. Devas. J. Bone & Joint Surg. **39-B**:114 (Feb.) 1957.

No detailed review of the early work of Bankart and his colleagues has ever been published. Fifty cases which were operated on by Bankart between 1925 and 1954 were re-evaluated. Of these, 46 were examined by the authors and four responded by questionnaire. The mechanism of injury was variable and no increased involvement was noted in the subdominant extremity. The "Bankart lesion," gleno-labral detachment, was described in 46 patients in this series. Concerning the range of motion, the average loss was only 10 degrees of abduction and half the patients had a loss of rotation of 10 degrees or less. The authors feel that the Bankart procedure is probably the most reliable operation for the cure of recurrent dislocation of the shoulder regardless of the etiology.

Office Management of Painful Feet. E. M. Hauser. Surg. Clin. North America **37**:75 (Feb.) 1957.

A clear, detailed description is given of points to be covered in taking a history and performing an examination of patients with foot complaints. For each of the following conditions—flatfoot; foot strain; sprained ankle; calluses, corns and exostoses; arthritic and gouty toes; mycosis; warts and ulcers; fractures of the toes; march foot; painful heel; foot infections, and ingrown toenail—a discussion is given of the treatment used by the author. Many very illustrative pictures and drawings accompany the descriptions of physical findings and of technics for treatment.

Evaluation of the Transmetatarsal Amputation in Diabetic Patients. F. C. Wheelock; J. B. McKittrick, and H. F. Root. Surgery **41**:2 (Feb.) 1957.

The authors describe their results on 433 transmetatarsal amputations in diabetics, 67 of which were for neuropathy and 366 for arterial insufficiency. Three year follow-up showed that 44 out of 47 patients who lived were "doing well" at that point and that 31 of 34 of the group alive more than five years were also doing well. Of the older, larger arterial insufficiency group, 61 per cent of those living for three years had healed stumps at the end of that time, while only 50 per cent of those living five years were similarly fortunate. In the arterial insufficiency group, the plantar skin must be intact and on the dorsum there must be no necrosis proximal to the metatarsal phalangeal joints and then this amputation is advised when simple transmetatarsal toe operations cannot be done due to the proximal location of the lesion or when more than one toe is involved. The authors also hesitate to operate through the forefoot if rest pain cannot be controlled without narcotics; if there is much rubor on dependency, or if the venous filling time is over 25 seconds. The procedure will seldom be successful unless the necrotizing process has been localized by bedrest and conservative measures; all active infection has been brought under control by rest, antibiotics, and surgical drainage if indicated, and all rest pain has disappeared. The majority of failures occurred immediately post-operatively. Although the operative mortality is low, the number of patients who die within a few years is great, reflecting their poor general condition.

Technic and post-operative care are described including sufficient elevation of the head to assure filling the veins of the foot

and avoid blanching, appropriate antibiotic therapy, and gradually increasing weight bearing usually beginning three to five weeks after surgery. Lamb's wool is stuffed in the toes of a regular shoe in which a spring steel-plate is inserted between the layers of leather in the sole to prevent curling up of the shoe.

It is concluded that the transmetatarsal amputation has proved sufficiently successful and durable to indicate its continued use in properly selected diabetic patients particularly since the longevity of the opposite leg is so frequently questionable.

Studies of the Pharynx: Poliomyelitis Disabilities of the Upper Pharynx. James F. Bosma. Pediatrics **19**:881 (May) 1957.

Careful clinical examinations of the anatomy of the oropharynx and mechanisms of swallowing in normal subjects and patients with bulbar poliomyelitis have been performed by Bosma. Subsequently, serial radiography of swallowing was performed using a thin barium mixture after coating the mucosa by intranasal instillation of lipoidol with the subject supine. The formation of a bolus, its passage through the oral cavity into the oropharynx, and subsequent descent into the hypopharynx is described and demonstrated by illustrations. By this method the author defines the function of the various structures and their muscular components in speech and swallowing, and the types of dysfunction resulting from paralysis or contracture of the muscles involved.

Isolated Ileal Segment in Urinary Surgery. D. C. Malcolm. J. Urol. **77**:182 (Feb.) 1957.

The author describes how isolated segments of ileum are being utilized for urinary diversion to the skin, as a substitute for all or a portion of a diseased ureter, to propel urine where normal tonicity of the ureter is lost, to increase bladder capacity, and as a valve for urinary incontinence. The first use described by Bricker (ureteroileostomy with cutaneous ileostomy) was for cases of pelvic evisceration when it was necessary to remove the sigmoid. However, in addition to its use for such radical surgery in carcinoma, the ileum has been successfully utilized as a means of diverting urine in paraplegics with incontinence and other complications, but it is difficult to know when such a procedure is indicated. Preoperative preparation and the technical aspects of the surgery are described briefly, and the author presents cases to illustrate some of the uses mentioned for the procedure. Malcolm concludes that the isolated ileal segment is a satisfactory structure for use in reconstructive urinary tract surgery and that further clinical use of this structure is justified in such situations.

Amputations and Modern Prosthetics. C. L. Compere, and R. G. Thompson. Surg. Clin. North America **37**:103 (Feb.) 1957.

Satisfactory prostheses for all levels of amputation in the upper extremity can now be fabricated. All possible length in the upper extremity should be retained. An amputation of any length in the lower extremity can now be fitted with a satisfactory prosthesis with the exception of the distal two-thirds of the lower extremity. There are, however, still sites of preference in the lower extremity which are as follows: through the metatarsals and toes, one-quarter to one-half inch above the distal tip of the tibia; five to six and one-half inches below the knee; disarticulation of the knee, and three to four inches above the knee joint. A discussion is given of the prosthesis which is suitable to particular amputation sites. At present a suction socket for the above-knee amputee is recommended in which there is an anatomical shape to the top with a much higher margin anteriorly and laterally than has been used routinely for the last few years. A prosthesis has now been developed for hip disarticulation and hemipelvectomy amputees which embodies entirely new principles as compared to the old tilting table type. This new type shows an improvement in function and is accepted more readily by patients.

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Subacute Sclerosing Leukoencephalitis, van Bogaert Type. Charles M. Poser, and Joseph Padermecker. J. Pediat. **50**:408 (Apr.) 1957.

Seven cases of subacute sclerosing leukoencephalitis, a disease previously described by van Bogaert and often confused with Schilder's disease and diffuse sclerosis are presented.

The clinical picture is that of a subacute progressive illness affecting children and young adolescents which runs a course of several months and ends in death. There is early intellectual deterioration with severe involvement of all psychic functions leading to complete dementia. Impaired scholastic ability is a common and prominent early symptom. There are convulsive episodes which are frequently associated with complex dyskinesias and hyperkinesias such as myoclonic jerks. Pyramidal tract signs are inconstant. Terminally bilateral spasticity and decerebrate rigidity are seen. The patient usually becomes cachectic and has frequent unexplained periods of fever. Blood, urine, and spinal fluid examinations are almost always within normal limits except for the frequent finding of a colloidal gold curve of the paretic type. No predisposing factors or prodromal symptoms have been recognized.

The histopathologic picture is one of fibrillary gliosis accompanied by an inflammatory reaction revealing lymphocytes and plasma cells. The entire cerebral white matter is involved with frequent encroachment into the cerebral cortex, basal ganglia, thalamus, brain stem, spinal cord and spinal nerve roots. Demyelination is slight.

The electroencephalographic pattern shows rhythmic complexes consisting of one or a few slow spike discharges and a train of high voltage (200-400 microvolts) slow waves.

This disease is of interest because it is often confused with other diffuse encephalopathies of childhood and because of its characteristic clinical and histopathologic picture.

Individual Variations in Expenditure of Energy. J. Boyens, and R. A. McCance. Lancet **1**:225 (Feb. 2) 1957.

The fact that a wide difference in the expenditure of energy necessary to perform a given task may vary from person to person has been known for some time. The reasons for this wide variation are not, however, well documented.

Fourteen female and twenty-two male college students composed a trial group on which expenditure of energy in cal./sq. m./h. was determined in the lying, sitting and standing positions. Caloric output was calculated from the non-protein respiratory quotient and the caloric liberation tables of Cathcart and Cuthbertson.

Six subjects (four male, two female) with extremes in energy expenditures during rest were selected for further study. These subjects were then evaluated over a period of seven to fourteen days during which the total caloric intake as well as energy output was determined.

Generally, the resting relationship did not hold true during activity. This was attributed to differences in weight in the patient and differences in degrees of relaxation in the basal state.

This study again points out the fact that a marked difference in basal metabolism exists in what are generally considered normal subjects.

Peripheral Nerve Involvement in Systemic Primary Amyloidosis. Robert M. Clark, and Robert F. Bennett. Lab. Invest. **6**:125 (Mar.-Apr.) 1957.

This report concerns the autopsy findings of two patients who presented signs of peripheral neuritis (pain, paresthesia, or weakness). Both suffered a steady downhill course which was not modified by treatment, and at the time of death the etiology of the peripheral neuritis was undetermined. Microscopic study using periodic-acid-Schiff stain, Congo red, iodine green, crystal violet, Van Gieson's connective tissue and phosphotungstic acid — hematoxylin stains demonstrated the presence of amyloid in both cases in the heart, valves, vessels, smooth muscle, and elsewhere. In both cases amyloid was demonstrated in peripheral nerves, with destruction of myelin sheaths, and decreased number of nerve fibers. The authors suggest that the original site of deposition was in the vasa nervorum, but changes were so far advanced that the original site could not be identified.

Problems of Cord Bladder Rehabilitation. A. E. Comarr. J. Urol. **77**:232 (Feb.) 1957.

Comarr describes the bladder training problems involved with 180 patients with spinal cord injuries at the VA Paraplegia Center at Long Beach, Calif. Eighty-five (47%) are catheter free, 95 (53%) have catheters, 118 (66%) were catheter free at one time or another, whereas 62 (34%) have never been catheter free. He does not state how many of the catheter free patients are continent nor does he break down these results according to the level or extent of the lesion.

Of the 118 catheter free patients, 53 (45%) became catheter free by straight drainage, 31 (26%) by tidal drainage and/or bladder training, and 34 (29%) by other methods including transurethral vesical neck resection, pudendal blocks, obturator neurotomies, adductor myotomies, topical mucosal

anesthesia of bladder with pontocaine, or ice water stimulation of bladder. The reasons which necessitated uninterrupted catheter drainage were "inability to crede or strain, paroxysmal hypertension, renal calculosis, persistent low grade fever, uncooperative patients, patient preference, vesicoureteral reflux, penoscrotal fistulas, and inability to create automaticity."

The question as to whether the bladder function of those patients who are catheter free can be attributed to tidal drainage and/or bladder training cannot be answered because it was routine to place all patients on tidal drainage unless contraindicated under one or more of the above criteria. The author feels, however, that such training is indicated even though he has shown it is not the "panacea claimed by others." He feels, if nothing else, it may aid in "conditioning the reflex" and is a good method of cleansing the bladder.

The Effects of the Temperature of the Floor Surface and of the Air on Thermal Sensations and the Skin of the Feet. F. A. Chrenko. Brit. J. Indust. Med. **14**:13 (Jan.) 1957.

Three women and five men wearing their normal shoes and clothing sat for one-hour periods with their feet on a heated floor or walked slowly about for the same period of time on the same floor. There were 379 sitting experiments and 476 walking experiments. The average air temperature was 68 F. but the temperature of different experiments ranged from 58 F. to 76 F.

A skin temperature of 93.6 F. on the sole of the foot measured by means of a copper-constantan thermocouple was associated with a 50 per cent incidence of discomfort. No uncomfortable warming of the feet occurred until the floor temperature exceeded 77 F.

Skin temperature of the sole tended to be more closely associated with the temperature of the floor surface than with the air temperature. However, regression equations revealed that air temperature affected both the temperature of the sole and the sensation of warmth (expressed on an arbitrary numerical scale). Numerous attempts to determine changes in girth at the instep and ankle with a mercury-in-rubber strain gauge gave inconclusive results.

The author concludes that in a room maintained at normal temperature the floor temperature should not exceed 75 F.-77 F. This agrees with conclusions of other investigators.

Surgical Treatment for Poliomyelitis Paralysis. Principles of Reconstruction of the Upper Extremity. E. R. Schottstaedt, et al. California Med. **86**:32 (Jan.) 1957.

Consideration of any reconstructive surgical procedure must include not only the physical status but also the functional goals of the patient to be established. The proper choice of each surgical measure is governed by the fact that one is trying to provide easier means of self-care or is expecting to change (improve) the employability status of the patient. The degree of expected improvement will of course depend on the measures used.

Five basic surgical measures to be used in reconstructive work are presented. These are arthrodesis, bone block, muscle transposition, tenodesis and tendon transplantation. In upper extremity work, movements most essential to function include grasp, wrist flexion, extension, pronation and supination, elbow flexion and extension, rotary motions and abduction of the humerus.

The authors carefully describe those technics of reconstructive surgery most favorably employed in their experience. These include procedures to improve movement of the thumb and fingers, wrist, elbow, humeral rotation, scapula, and stabilization of the trunk. It is emphasized that any muscle of sufficient strength can be put to a new task if the blood and nerve supply are intact and the line of pull can be maintained in a straight line. Pulleys and angulation of muscle transplants are seldom successful according to these authors. Risk of a secondary nature are minimal if the transpositions of muscle are carefully executed and the muscles used for transposition are not doing an essential job in their primary location.

Myotonia Dystrophica: Report of Six Cases in One Family, with an Analysis of the Metabolic Defects. C. M. Holland, Jr., and S. R. Hill, Jr. Ann. Int. Med. **44**:738 (Apr.) 1956.

Briefly reviewed is the history of the disease. It is carefully distinguished between Thomsen's disease, which is myotonia congenita, and myotonia dystrophica. The differential diagnostic features of the two types of myotonia are given. In the dystrophic form, the muscular atrophy has a characteristic pattern which involves the abductors of the thumb, forearm muscles, sternocleidomastoids, facial muscles, quadriceps, and dorsiflexors of the foot. Cataract formation, varied endocrinopathies, gonadal insufficiencies, and baldness in males are features found in myotonia dystrophica and not evident in the congenita form. Myotonia dystrophica is transmitted as a single factor dominant which is modified by anticipation and by potentiation. The disease dies out in each family due to the progressive inheritance with sterility in the last affected generation.

A detailed study of a family in which six members were affected with myotonia dystrophica was presented. One of the five males had extensive endocrine studies in an attempt to determine the role of pituitary dysfunction,

the role of endocrinopathy in muscular disorders, and to determine whether any of the muscular dysfunction could be improved by proper hormone therapy. In one case, the function of the pituitary, adrenal cortex and thyroid was found to be normal. There was an extrathyroid hypometabolism and a slightly diminished excretion of urinary 17-ketosteroids. Histologic examination of the testes revealed seminiferous tubular atrophy with absent spermatogenic and Sertoli cells and normal appearing Leydig cells.

The authors concluded that there is no evidence that endocrinopathy is in any way responsible for, or that correction of the endocrinopathy will materially improve, the muscular defects in this disease.

Urologic Problems in Spina Bifida. H. C. Kennedy, and C. V. Hodges. J. Urol. **77**:221 (Feb.) 1957.

Kennedy and Hodges describe their experiences with the urologic problems of 27 patients with spina bifida. These include obstruction, infection, impairment of renal function, and incontinence. Their objectives include "preservation and restoration of renal function, elimination of residual urine, elimination of infection and establishment of satisfactory urinary control." They suggest how urinary diversion may be accomplished by indwelling urethral catheter, nephrostomy, implantation of the ureters in an isolated ileal segment, and cystostomy. Prevention of vesicoureteral reflux has been achieved by ureterovesicoplasty or ureteroneocystostomy. Residual urine may occasionally be reduced or eliminated by ureterolysis and partial ureterectomy and/or vesicourethroplasty. Infection may be combatted by the judicious use of appropriate antibiotic therapy. They plan to discuss the establishment of control in detail in a future paper, but mention the use of anticholinergic agents and/or rectus fascial transplants.

Syndrome of Median Nerve Compression in the Carpal Tunnel. B. Blockberg, and J. Fey. Acta orthop. scandinav. **26**:120 1956.

Four cases of carpal tunnel syndromes were presented by the authors. Three of the four cases were bilateral in character, and of these the dominant hand was involved first. Each history was presented in detail and each case was later surgically treated with success. Three of the patients performed heavy type work. The fourth was a typist. All patients did work requiring more than average use of the hand and wrist.

Paget first described a median nerve injury following a fractured wrist in 1865. A review of numerous subsequent reports up to 1954 is included in the article. There is a description of the anatomical relationship of the carpal tunnel to the dorsal and ulnar-radial osseous boundaries and the firm fibrous band, and the transverse carpal ligament on the volar aspect of the hand. The authors state that the diagnosis in the "clear cut," well-developed cases offers no problem, but carpal tunnel syndrome must be differentiated from such problems as compression of the C6 or C7 roots, amyotrophic lateral sclerosis and thoracic outlet syndromes. Attention is drawn to the diagnostic aids used in differentiating this syndrome from other problems. These include: Tinel's sign (passive extension of wrist); cuff test (inflation of pneumatic tourniquet around upper arm with rapid development of paresthesias); thenar muscle atrophy and strength loss; and the skin distribution of the paresthesias and pressure over the palmar aspect of the carpus accentuating the paresthesias.

Whether the etiologic factors were those of chronic traumatization of the nerve in the tunnel or true compression with ischemia and edema of the nerve was of minor importance. The treatment in all cases is surgical, and consists of division of transverse carpal ligament with decompression of the nerve. Conservative treatment by immobilization is not recommended because of the likelihood of later recurrence upon resumption of use of the hand. After surgical measures are completed, the prognosis is good. The pain and paresthesias soon disappear, then the sensory loss disappears and finally full motor function returns. Most patients after appropriate treatment can return to their usual activities.

Limp in Childhood. A. B. Ferguson. Pennsylvania M. J. **59**:1351 (Nov.) 1956.

The principal aim of this article is to emphasize features of limp of sudden onset in children which may lead to a suspicion of the underlying etiology. A page of photographic illustrations is included.

A brief description of the antalgic limp stressing the short stance phase of the involved leg is given by the author. He discusses the antalgic limp of foot strain, emphasizing that the pain occurs toward the end of the day and is located typically in the calf, along the course of the posterior tibial tendon. He includes in the discussion of antalgic gait fractures of the tibia and fibula in which the child can walk provided the fracture is of the spiral type, has no displacement and no tear of the thick periosteal tube. He urges that roentgenograms be used but warns that often such fractures may not be readily recognized until there is necrosis of bone along the fracture line and/or a healing subperiosteal ossification. The author emphasizes need for complete diagnostic studies in patients with obviously unexplained

atrophy of the lower extremities.

The author discusses anatomical changes of position and their effects on gait. He gives as examples flexion of the knee during gait, points to the knee as cause of difficulty, and briefly describes osteochondritis desiccans and congenital discoid meniscus. Atrophy of the quadriceps muscle and difficulty climbing stairs indicate pathology in the knee joint. The author reviewed briefly the mechanics of the hip in gait, discussed dislocation (congenital), slipped epiphysis, Legg-Perthes' disease and synovitis of the hip. He emphasizes the need of placing these patients in appropriate hands for treatment. Gaits of patients with paralysis and cerebral palsy were described very briefly.

Paget's Disease — Active or Quiescent? R. G. Grainger, and J. W. Laws. Brit. J. Radiol. **30**:351 (Mar.) 1957.

The authors describe follow-up studies on 20 patients with Paget's disease over a three-year period. Eight of the 20 showed radiological deterioration within the space of two years as evidenced by osteoporosis circumscripta in three, incomplete or pseudo-fractures in two, and spontaneous pathological fractures of long bones in three. These changes did not occur in any of the "quiescent" patients. The serum alkaline phosphatase values were significantly higher in the "active" than in the "quiescent" group. Although in only one case was it felt by the authors that the disease interfered seriously with working capacity, it would seem that the occurrence of pathological fractures is a significant interference. In no patient was there significant loss of cardiorespiratory reserve attributable to the disease, and no urinary abnormality or excessive calciuria was detected. The demonstration of local osteoporosis as the essential and earliest radiological feature is in accordance with the findings of others. They feel that the stresses and strains on the weakened bone consequent to this osteoporosis stimulate osteoblastic activity with the resultant new bone being attacked by continuing bone destruction yielding the chaotic radiological and histological picture characteristic of Paget's disease.

Studies on Phenylketonuria: VI. EEG Studies in Phenylketonuria. Niels L. Low; James F. Bosma, and Marvin D. Armstrong. A.M.A. Arch. Neurol. & Psychiat. 77:359 (Apr.) 1957.

The authors have studied the electroencephalographic findings in 23 patients with phenylketonuria. The ages at first EEG examination ranged from seven months to 47 years, the I.Q. ranged from 10 to 82. Because these patients have an inherited biochemical defect in the oxidation of phenylalanine to tyrosine, phenylalanine-restricted diets have been prepared for their use. The authors demonstrated a high incidence of seizures and electroencephalographic changes of various types in this group. Serial studies on seven patients receiving phenylalanine-restricted diets revealed improvement in the EEG in five, (with increasingly abnormal EEG in two when treatment was interrupted) and no change in two. The authors suggest that some of the pathological symptoms occur as a result of presence of some toxic substance which is no longer present when blood phenylalanine is lowered to normal levels. The demonstration of frequent seizures in these patients and the EEG improvement with dietary management suggest that this dietary management may well be applied to age-groups other than infancy, where it is most used at present.

Use of the Hypospray Jet Injector for the Intra-Articular and Local Administration of Hydrocortisone Acetate. Morris Ziff, et al. Ann. Rheumat. Dis. 15:227 (Sept.) 1956.

The purpose of this experiment was to study the possible effectiveness of the use of the hypospray jet injector for intra-articular administration of hydrocortisone. The authors first injected trypan blue into the joints of cadavers by the hypospray method. They found that there was a greater concentration of the dye in the joint space and the synovium than in the surrounding tissue. Diodrast was then injected by the hypospray method and again the dye appeared on x-ray studies to be in greatest concentration in the joint and the periarticular structures. The authors next studied the practicality of this method of administration by injecting either trypan blue or hydrocortisone at one aspect of the joint and by removing it at another a short time after the injection. They were able to recover significant amounts of the material in the aspirated joint fluid.

In a clinical trial, 71 patients with rheumatic conditions were given a series of 178 injections. Fifty-two of these individuals had rheumatoid arthritis. For this group, a system of measurements was used to judge improvement. The small joints were injected with 15 mg. of hydrocortisone acetate in a volume of 0.6 ml., the wrist with 25 mg. in one ml., and the knee with 25 or 50 mg. in one ml. volume. On such a regime, a marked improvement was noted in from 42 to 86 per cent of the treated joints. The greatest improvement (86 per cent) was noted in smaller joints of fingers and feet and the least improvement (42 per cent) was noted in the treatment of the knee. These figures compare favorably with those of Hollander using more conventional methods of injection. A small

number of patients with acute bursitis responded fairly well to hypospray injection.

The authors believe that hypospray jet injection of hydrocortisone acetate will provide a satisfactory, safe, and simple method for the local and intra-articular administration of this established form of steroid therapy.

Dermatomyositis: Unusual Features, Complications and Treatment. H. B. Christianson, et al. A.M.A. Arch. Dermat. & Syph. **74**:581 (Dec.) 1956.

The authors selected 270 cases of dermatomyositis as the basis of their report. They define dermatomyositis as a relatively rare, non-suppurative polymyositis of unknown cause with polymorphous cutaneous lesions of a non-specific type. The ratio of occurrence was found to be two females to one male. Forty patients were children. The ages of the patients varied from 2½ to 73 years. The occurrence of the disease in siblings was observed in only one instance.

Although other authors have found a significant association of dermatomyositis with malignancy, the associated occurrence in 6.7 per cent of these patients was thought to be incidental. Cushing's syndrome was found in two patients. Positive clot tests for lupus erythematosus were present in two people with a confirmed clinical diagnosis of dermatomyositis. Two patients had typical pityriasis rubra eruptions during the course of their illnesses. Sixty per cent of this group had dysphagia. Abdominal pain, gastrointestinal hemorrhage, perforation of gastric ulcers and abdominal adhesions were occasional complications. Calcinosis was found in 10 per cent of the entire series; however, the incidence was 29.1 per cent in the 55 patients under 16 years of age. Osteoporosis occurred in 12 patients under 16 years of age and in 18 patients over 16 years of age. Steroid-induced osteoporosis was found in five cases.

The authors outlined their program of cortisone therapy. They state that cortisone was well tolerated and concluded that prolonged administration of steroids in conjunction with other supportive measures, particularly physical therapy, seems well worth while.

Need for Consideration of Intraspinal Tumors as a Cause of Pain and Disability. W. McK. Craig. J.A.M.A. **163**:436 (Feb. 9) 1957.

Histories of 11 patients with intraspinal tumors simulating several types of visceral and systemic disease were presented. The original classic case of Sir Victor Horsley was reviewed in detail. The remaining 10 cases were described from the personal experiences of the author. He emphasizes that many of the pains attributed to visceral pathology (gall bladder disease, peptic ulcer, pulmonary and cardiac lesions) may actually be caused by an intraspinal tumor.

Craig points out that the character of the pain associated with intraspinal tumors is almost pathognomonic. The pain persists in a localized area and extends over the same nerve roots. It is usually lancinating, aggravated by coughing or sneezing and/or straining at stool and invariably awakens the patient four to six hours after retiring. Often the pain is severe enough to compel the patient to walk the floor or sleep in a sitting position.

The author reviewed the technics for accurate diagnosis including myelography and cerebrospinal fluid studies; briefly discusses problems of operation including the choice of anesthesia, as well as the postoperative management. He states that at the Mayo Clinic one operation is performed for removal of intraspinal tumor for every 25 for removal of ruptured intervertebral discs. The majority of these tumors are of the benign variety. The mortality rate in such operations was four per cent.

Paget's Disease. (Editorial) Lancet **2**:1294 (Dec. 22) 1956.

It is stated in this editorial that more and more thought and research are being devoted to the chronic ailments of later life, and few of these have a better claim to a new experimental and clinical approach than Paget's disease of the bone. The diagnosis is often made by radiological or autopsy findings, but this subclinical form is of more than academic interest.

Some have contended it is a focal disease of bone consisting of self-contained lesions, others contended it is a generalized disease of bone. The following points favor the latter view — many authors describe patients in whom the entire skeleton gradually became involved; too short a period of observation, or the patient's premature death, may account for most instances of one-bone Paget's disease, and the extraordinary rise in the serum alkaline-phosphatase level is easier to reconcile with a general metabolic disturbance. (Calcium and phosphate levels may be normal, so this suggests the enzyme is concerned with the production of organic matrix of bone.)

The nature of Paget's disease remains in doubt. Lately attention has been given to the idea of a primary vascular abnormality. There is a tremendous increase in blood-flow to "Paget" bone and when the disease is widespread this may impose a severe strain on the heart. The question as to whether increased blood-flow precedes bone changes, or vice versa, is unanswered. No other abnormality of the skeleton affects the local circulation as does Paget's disease. In an important

minority the disease is still responsible for much suffering and although the pain of Paget's disease is seldom severe, it is completely intractable and as demoralizing as an unrelieved "mild" toothache. In the sclerotic phase of the disease union is slow and often fibrous although callus formation is rapid and abundant in the vascular phase. Long immobilization may lead to osteoporosis, metastatic calcification, renal failure, and "chemical" death. The vascular bone marrow makes internal fixation a dangerous procedure. Fractures may represent sarcomatous degeneration, or a tumor may develop at the site of apparent union.

Apart from pain, fractures, and malignant change in the skeleton itself, every organ of the body may be affected. A slight thickening of margins of foramina of skull and spinal column may lead to blindness, deafness, other cranial-nerve palsies, nasal obstruction, sinus infection, severe neuralgias, or paraplegia, diabetes insipidus, deformity and immobility of the thorax, bowing of the long bones and osteoarthritis, mental symptoms, and involvement of the jaw with dental complications.

With wider recognition of these aspects, Paget's disease is becoming more and more a mirror reflecting all the common infirmities of old age.

Circulatory Depression Induced by High Levels of Positive Pressure Breathing Counteracted by Metaraminol (Aramine). W. L. Morgan; J. T. Binim, and S. J. Sarnoff. J. Appl. Physiol. **10**:26 (Jan.) 1957.

High levels of positive pressure breathing depress cardiac output and significantly lower arterial pressure. This is usually compensated for by sympathetic vasoconstriction with a rapid return of arterial pressure to normal. Mongrel dogs, anesthetized with morphine sulfate, were subjected to positive pressure breathing which substantially depressed the femoral artery pressure for a prolonged period of time. Aramine was then administered by intramuscular or intravenous injection. Similar studies were also carried out on a group of dogs who were protected against the positive pressure breathing by counterpressure in the form of inflatable canvas suits. The administration of Aramine significantly improved the circulation in all animals subjected to the positive pressure breathing by increasing the peripheral vascular resistance, thereby maintaining a more adequate perfusion pressure especially to the vital structures such as the brain and the heart. The protection afforded by the Aramine in the dogs with counterpressure was less than in the non-protected group. The finding that a sympathomimetic agent improves the circulation in dogs subjected to positive pressure breathing is compatible with the view that vasoconstriction is an important compensatory mechanism in positive pressure breathing.

The Relationship of Therapy with Cortisone to the Incidence of Vascular Lesions in Rheumatoid Arthritis. J. W. Kemper; A. H. Baggenstoss, and C. H. Slocumb. Ann. Int. Med. **46**:831 (May) 1957.

Fifty-two cases of rheumatoid arthritis which had been examined at necropsy at the Mayo Clinic through 1954 were reviewed. Fourteen of these had received cortisone and 38 had not. None of those who had not received cortisone showed generalized lesions of polyarteritis nodosa. Of the fourteen treated with cortisone, four had generalized lesions of polyarthritis nodosa. "These findings suggest that, in certain susceptible patients with rheumatoid arthritis, the administration of cortisone precipitates the development of diffuse necrotizing arteritis." Why this occurs in rheumatoid arthritis patients treated with cortisone and not in patients with other diseases treated with high doses of cortisone is not known. No vascular lesions specific for rheumatoid arthritis were found.

Physical Therapy in Conservative Management of Back Injuries. Eugene Michels. Phys. Therapy Rev. **37**:139 (Mar.) 1957.

Two routines of therapy, one for "extension injuries," and one for "flexion injuries" after attempting to define which clinical categories of back complaints or injuries belong in each group are outlined. Part of the author's hypothesis is that herniation of the nucleus pulposus in the lumbar area is an "extension injury," and that its treatment must be that designed for extension injuries. The selection of cases, attempts at a controlled series or means of establishing definitive diagnoses are not satisfactorily explained, and the total number treated not adequate for statistical evaluation.

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medical news

Members are invited to send to this office items of news of general interest, for example, those relating to society activities, new hospitals, education, etc. Programs should be received at least six weeks before the date of meeting.

Texas Physical Medicine And Rehabilitation Society

Officers of the recently founded Texas Physical Medicine and Rehabilitation Society, elected at its first formal meeting April 28 in Dallas, are Dr. Odon F. von Werssowetz, Gonzales, president; Dr. Vann S. Taylor, Dallas, vice-president; and Dr. Edward M. Krusen, Dallas, secretary-treasurer. Other founding members of the group include Dr. L. A. Leavitt, Houston, and Dr. Oscar O. Selke, Houston.

Purpose of the society is "to promote the art and sciences of medicine and the betterment of public health through an understanding and utilization of the function and procedures of physical medicine and rehabilitation." Active members must be diplomates of the American Board of Physical Medicine and Rehabilitation, but associate members may include physicians interested in utilization of the functions and procedures of physical medicine and rehabilitation.

Measure Blood Flow

Measuring abdominal blood flow may disclose what happens to the body's circulation during serious shock, members of the New York Heart Association's annual science writers' tour learned from Dr. Stanley E. Bradley, Columbia University College of Physicians and Surgeons.

Dr. Bradley and his associates have worked on blood flow for twelve years and have developed widely used technics for measuring the blood in the viscera, the abdominal area that includes the digestive tract, pancreas, spleen and liver.

Some researchers believe that after severe hemorrhage, too much blood may accumulate in the abdomen and result in irreversible shock.

By tracing the path of blood through the viscera with radioactive iodine, Dr. Bradley found that about one and one-half quarts of blood are held in this area. This entire amount is estimated to be completely changed about once a minute, he reported.

New Drug for "Shaking Palsy"

A drug for treating Parkinson's disease, or "shaking palsy," that brings relief from many of the distressing symptoms of the illness was reported by Drs. Lewis J. Doshay and Kate Constable of the College of Physicians and Surgeons, Columbia University, New York, in the *Journal of the American Medical Association* (April 13).

Trade-named Disipal and known chemically as orphenadrine hydrochloride, the drug was especially useful in releasing the free and automatic activity of the body, which is either slowed down or lost in victims of Parkinson's disease.

Although it had no effect on the serious shaking which is characteristic of the disease, it did improve minor tremor, balance, posture, gait and mental depression, the researchers reported.

A New Motion Picture

"Animals in Research" has been produced by the Walter Reed Army Medical Center. The film is a 16 mm. film with a sound track; running time is 28 minutes. It is a description of the system of animal husbandry which has been developed by the Veterinary Division at the Walter Reed Army Institute of Research. The objective of the program is to produce uniform, healthy animals, free of disease and of parasites. The film is available for loan to research institutions and similar organizations which are raising or maintaining experimental animals. It is being loaned on a "first-come, first-served" basis, but at present there is a three or four month delay in filling requests for the film because of the number of previous requests already submitted.

Relax Housekeeping to Avoid Arthritis

American women should relax their housekeeping standards as much as possible if they want to avoid arthritis, the Arthritis and Rheumatism Foundation has warned.

Major house cleaning should be done in installments and mothers should "try to take it easier with the children," the Foundation reported.

"Rheumatoid arthritis, the most severe and crippling form of the disease, strikes women three times as often as men. Most of the victims are young housewives and working women between the ages of 20 and 35, the childbearing years."

The Foundation listed the following warning signs or early symptoms of rheumatoid arthritis: morning stiffness, pain and swelling of the joints, persistent muscular aches and pains, unexplained weight loss, fever and weakness.

"If any of these warning signs occur and persist," the Foundation said, "it is time to consult a physician. If neglected, in rheumatoid arthritis, they may recur with sudden violence and progress to fusion of the joints into one solid mass."

The Foundation added that, although there is as yet no cure for arthritis, women who suffer its symptoms are not necessarily headed for the wheelchair. With its present knowledge, medical science can prevent serious crippling in 70% of the persons who develop arthritis if symptoms are recognized early and treatment is begun promptly.

Prizes in Plastic Surgery

The Foundation of the American Society of Plastic and Reconstructive Surgery announces the eighth annual scholarship contest. Two prizes ($1,000 and $750) will be awarded for the two best essays on original research in plastic surgery by plastic surgeons who have been in practice less than five years. Two other awards, consisting of silver plaques, will be given for the best research in plastic surgery by a plastic surgeon who has been in practice more than five years and a researcher outside the field of plastic surgery. For information, write Dr. Clarence R. Straatsma, President, Foundation of the American Society of Plastic and Reconstructive Surgery, 5 E. 83rd St., New York City.

Scientific Translations Center in Chicago

The Special Libraries Association announces that a grant of $20,350 from the National Science Foundation provides for support of a Scientific Translations Center at the John Crerar Library in Chicago. The center will be a depository for translations contributed or loaned by government agencies, scientific societies, industrial laboratories, universities, and similar organizations. Originally established in 1953 as the association's translation pool, the center has been the depository for translations from all languages other than Russian. Information about the center may be obtained from John P. Binnington, Librarian, Brookhaven National Laboratory, Upton, N. Y.

Recent Publications by Members

Howard F. Polley and co-authors, "Diagnosis, Treatment and Prevention of Hypercortisonism in Patients with Rheumatoid Arthritis." Proceedings of the Staff Meetings of the Mayo Clinic, May 1, 1957.

Harriet E. Gillette, "Posture and Pain." Journal of the Medical Association of Georgia, April, 1957.

Howard A. Rusk and Michael M. Dacso, "Rehabilitation in the Aged." Bulletin of New York Academy of Medicine, October, 1956.

Paul A. Nelson, "Treatment of Patients with Cervicodorsal Outlet Syndrome." The Journal of the American Medical Association, April 27, 1957.

A. T. Richardson and co-author, "The Theory and Practice of Electrodiagnosis." Annals of Physical Medicine, May, 1957.

James W. Rae, Jr., and Leonard F. Bender, "Physical Therapy in Rheumatoid Arthritis." Journal of Chronic Diseases, June, 1957.

Hilda B. Case and co-authors, "Rehabilitation of Patients with Rheumatoid Arthritis." Journal of Chronic Diseases, June, 1957.

Robert L. Bennett and co-author, "The Aims and Methods of Occupational Therapy in the Treatment of the After-Effects of Poliomyelitis." The American Journal of Occupational Therapy, May-June, 1957.

The following articles were published in Department of Medicine and Surgery, Program Guide Information Bulletin, Physical Medicine and Rehabilitation Service, April 12, 1957:

Charles R. Brooke; Thomas J. D. Scanlan and co-author, "The Role of the Physical Medicine and Rehabilitation Service in the Treatment of the Long-Term Chronic Patient."

Joseph Martella and co-author, "Report of Followup Survey of Patients Discharged Maximum Hospital Benefit."

Samuel G. Feuer, "Home Care for the Hemiplegic."

Joshua Ehrlich, "Failure of Patients to Attend Treatment Clinics."

Roy H. Nyquist and co-author, "Car-Gutter Hook with Swivel-Sling for Quadriplegic Patients."

Roy H. Nyquist and co-author, "A Portable Toilet Seat for Paraplegic Patients."

Roy H. Nyquist, "Special Sling for Hoisting Quadriplegic Patients."

Early Aid for Backward Child

Proper attention to mentally retarded children and their parents when the children are of nursery school age might alleviate difficulties in later life and reduce the population of institutions for the mentally defective. This conclusion, made as a result of study of a group of retarded pre-school children, was reported at a meeting of the American Orthopsychiatric Association.

Parents of children studied were all of average intelligence or better. The fathers were professional men or white collar workers.

Work with the parents proved to be of major importance in helping the children. Psychological factors in the parents' make-up and relationship seemed to contribute to the backwardness of the children.

Parents and children should receive help very early, as soon as there is any suspicion that the child is retarded, the scientists warn.

Living Cells Directly Affected

Work of two University of California researchers indicates that the growth hormone has its effect in the individual living cells, making them multiply and manufacture protein. In the past, scientists have questioned whether growth hormone acts indirectly through some gland of the body.

Growth hormone is one of a number of secretions—ACTH is another—produced by the pituitary, the master gland at the base of the brain. In the case of ACTH, it has long been known that this secretion acts on the adrenal glands to stimulate cortisone production. But the mode of action of growth hormone has remained unclear.

Doctors Henry D. Moon and Leone St. Vincent of the University of California Medical Center, San Francisco, supplied growth hormone to one of two batches of rat embryo cells being grown by standard tissue culture methods.

At the end of four days the number of cell nuclei and the amount of protein material in the cultures receiving growth hormone were significantly larger than in the cultures that did not receive hormone.

Diabetes Associations to Meet

An all-day symposium on "Recent Developments in Diabetes Mellitus" (pathology, diagnosis and therapy) will be sponsored by the Chicago Diabetes Association on November 20, 1957, Drake Hotel, Chicago. Registration is scheduled for 8:45 a.m. and lectures will begin at 9:00 a.m. Physicians registering for the course will be charged an enrollment fee of $25, with the exception of members of the Chicago Diabetes Association and the American Diabetes Association, who may enroll without charge. Members of the Academy of General Practice who attend the conference may claim hour-for-hour Category II credit.

New Sound Film Produced

A nine-minute sound film, "Rehabilitation of the Patient with Flail Arms," has been produced by the Department of Physical Medicine and Rehabilitation of New York University College of Medicine and is available for distribution. As an outgrowth of polio epidemics, there emerges a number of cases with severe residual involvement of the upper extremities. Automotive and industrial accidents also produce lesions which result in paralysis of the arms. These patients constitute a grave problem as they must depend on others in every activity of daily living that involves the use of the arms and hands. It is especially hard to find employment for people without functional arms. The Institute of Physical Medicine and Rehabilitation has been working on a functional arm brace that would enable a patient with flail arms to perform some of the more important activities of daily living and be able to use various business equipment that could provide vocational opportunities. The brace, which is depicted in this film, is constructed of fiberglass with aluminum, monel metal and steel fittings. It consists in general of a fiberglass shoulder-arm segment connected by means of two cables to a reciprocator mechanism mounted on the sole of the left shoe. Power for operating the arm and hand is supplied by various movements of the leg and foot. Prints of the film can be purchased for $20 from the Institute of Physical Medicine and Rehabilitation, 400 E. 34th St., New York 16, N. Y. The Institute cannot handle the film on a loan basis.

World Rehabilitation Fund

Formation of a new voluntary organization to stimulate international understanding through sponsorship of international projects in rehabilitation of the physically handicapped was announced. The new organization is the World Rehabilitation Fund, Inc. of which Dr. Howard A. Rusk is President. The Fund's first international scholarship to bring physicians and other rehabilitation workers to the United States for advanced study had been created with a grant to the Fund from the American President Lines. Under the scholarship, known as the American President Lines Fellowship, a physician from the Philippines will be given a minimum of one year's advanced training in physical medicine and

rehabilitation at the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center.

The objectives of the new organization are to speed independent self-assistance in underdeveloped areas; to make the contribution of the United States to the welfare of the disabled throughout the world better understood, and to develop international understanding and friendship. The Fund hopes to achieve these objectives by grants to existing operating international agencies for special international rehabilitation projects. Grants will be allocated to four kinds of work:

Consultation by authorities will foster improvement of current programs, and development of new services, where leaders recognize needs and will take responsibilities for meeting them.

Specialized training by making existent fellowships more widely known, by expanding U. S. facilities for teaching foreign students, obtaining fellowships for candidates whose qualifications promise likelihood of their becoming teachers in their homelands, and aid to indigenous teaching programs at centers and schools overseas through exchange of personnel.

Information support through use of more films, translations, teaching aids, applicable public education measures, data on equipment, materials and methods, establishment and expansion of reference centers.

Regional meetings whereby physicians, administrators, technical personnel and citizens can share experience in solving common problems and see demonstrations of technics perfected in other parts of the world.

Twenty Minute Diagnostic Technic

A more rapid technic for diagnosis of rheumatoid arthritis was reported by Dr. Joseph J. Bunim, clinical director of the National Institute of Arthritis and Metabolic Diseases. It can be performed in twenty minutes in a clinical laboratory or physician's office, according to Dr. Bunim.

Known as the bentonite flocculation test (BFT), the procedure will permit a medical technician or physician's assistant to perform 100 or more such tests per day. In addition, Bunim reports, it is as accurate as the best of current tests.

He said that BFT, like other tests for rheumatoid arthritis, is based on the principle that the serum of patients with active peripheral rheumatoid arthritis contains a "rheumatoid factor" that agglutinates sensitized particles.

The new test, he said, was administered to twenty-five patients with "typical" rheumatoid arthritis. In twenty the tests were positive. When applied to 163 controls with a wide variety of disorders, there were only three false positives.

Specialized Training in Service to the Blind Offered Under Traineeship Program

Opportunities for graduate level preparation in professional service to the blind are being made available by the Industrial Home for the Blind in Brooklyn, New York, with the cooperation of the Office of Vocational Rehabilitation. The program of preparation, lasting 20 or 40 weeks, depending upon the needs of the individual student, accepts a limited number of students each fall and spring for preparation as psychologists, vocational counselors, vocational placement specialists, foot travel instructors, vocational instructors, supervisors of sheltered workshops, vending stand supervisors, home teachers, administrators of vocational programs, and workers with the deaf-blind. Focused on supervised field experience, the program provides students with a basic orientation to the problems of blindness and the functions of agencies for the blind. In addition, students take course work in the psychological aspects of blindness, introduction to social case work, introduction to counseling, and eye conditions, as well as attending a series of lectures by specialists in the field. Each student receives a careful evaluation upon which vocational planning is based. All students in the program take graduate level courses at colleges and universities in the New York area, studying rehabilitation counseling or social case work.

For further information and application blanks, write to Dr. Herbert Rusalem, Director, Professional Training Department, Industrial Home for the Blind, 57 Willoughby Street, Brooklyn 1, New York. Entrance requirements include a bachelor's degree, a high degree of professional promise, and outstanding personal and professional competency.

Easter Seal Research Foundation Grants-in-Aid

The Easter Seal Research Foundation of the National Society for Crippled Children and Adults provides grants-in-aid for investigations concerned with the prevention and treatment of physical and associated disabilities, and the rehabilitation of the physically handicapped. Disabilities may be congenital or may result from accident or illness. Accident prevention, *per se*, is outside the scope of the Foundation's research interest.

Funds for research grants are derived from a fixed percentage of the gross returns of the annual Easter Seal campaign conducted by the National Society and its state and local affiliates.

The Foundation is concerned with investigations of the causes of crippling; the prevention of physical disabilities; methods for improving impaired functions or for mitigating the results of dysfunction, and measures

for enhancing the effectiveness of the rehabilitation process. Research projects may involve basic or clinical research or both.

The Foundation invites applications for grants-in-aid. Applications filed between September 1 and March 31 are reviewed in June. Applications filed between April 1 and August 31 are reviewed in November. Awards are announced during the months of June and November.

Films Available for Professional Audiences

Five new films available for showing to professional audiences are announced by the National Foundation for Infantile Paralysis. They are designed to interest physicians, nurses, physical therapists, occupational therapists and students of all professional schools.

Rehabilitation of Respiratory Patients: 1957, BW, Sound, 16mm, 12 minutes—The film presents the basic philosophy behind the programs of patient care, teaching and research as developed by the respiratory and rehabilitation centers. The film was produced in cooperation with the patient and staff of the Respiratory Center for Poliomyelitis, Ann Arbor, Mich.

Principles of Artificial Respiration: 1957, Color, Sound, 16mm, 29 minutes—The film uses normal subjects, patients and models to illustrate the basic physiological principles necessary to evaluate various types of manual and mechanical artificial respiration. The film was produced with the aid of a committee of researchers and clinicians from the Harvard School of Public Health, Boston.

Assistive Devices for the Physically Handicapped: 1957, Color, Sound, 16mm, 12 minutes—The film was produced in cooperation with the Mary MacArthur Poliomyelitis Respiratory Center, Wellesley Hills, Mass., the Southwestern Poliomyelitis Respiratory Center, Houston, and the Poliomyelitis Respiratory Center, Columbus, Ohio. It demonstrates various kinds of assistive devices used to increase the functional capacity of the physically disabled from such simple equipment as mouth stick to electric wheelchair.

Muscle Breathing Patterns in Poliomyelitis: 1956, Color, Sound, 16mm, 15 minutes—Produced under a grant by the Respiratory Center for Poliomyelitis, Hondo, Calif., this film uses normal subjects, patients and animation sequences to demonstrate various types of muscle breathing patterns encountered in poliomyelitis patients.

The Anatomy of the Hand—Part II: 1956, Color, Sound, 16mm, 30 minutes—The film uses dissections and models to demonstrate the structures of dorsal surface of the hand. The film was produced under a grant by the Department of Anatomy, Duke University of Medicine, Durham, N. C.

Three weeks' advance booking is requested for films. Write to Division of Professional Education, National Foundation for Infantile Paralysis, 301 E. 42nd St., New York City 17.

Fifth International Congress of Internal Medicine

The International Society of Internal Medicine has announced that its Fifth International Congress of Internal Medicine will be held at the Sheraton Hotel, Philadelphia, April 24-26, 1958. This will be the first meeting of the Society outside of Europe. In making the announcement, the International Society President, Sir Russell Brain, who is also President of the Royal College of Physicians of London, said, "The Executive Committee of the Society has chosen the United States for its Fifth Congress in response to an invitation extended by the American College of Physicians and with the objective of securing greater American participation in its deliberations and of allowing foreign members, at first hand, to learn more about American developments in the medical sciences."

At the Philadelphia Congress it is planned, through lectures and panels, to analyze medical achievements of world-wide significance, to evaluate certain apparent problems and to chart courses of action designed to enhance technical knowledge and to aid in the continuing war against disease. At the same time, the plan includes such social and cultural activities as will tend to promote cooperation, friendship and mutual understanding among physicians and peace among their countries.

The 1958 Annual Session of the American College of Physicians is scheduled for Atlantic City, April 28-May 2, immediately following the Philadelphia Congress. The members of the Congress are invited to attend all the scientific programs and extensive exhibits (the foreign members on a purely courtesy basis). Also, those members of the Society who make an early reservation and advance payment, may join certain Fellows of the College on its customary post-convention cruise to a near-by foreign country. Tours throughout the United States may be arranged through an approved travel agency.

Summary Reports from the "Institute on the Handicapped Child"

The "Institute on the Handicapped Child" held August 6-7, 1956 through a grant by United Cerebral Palsy, Incorporated was attended by teachers and administrators from several states. Summary reports of this meeting were prepared by committees in Philosophy, Administration, Physically Handicapped, Mentally Retarded, and Speech and Hearing

The complete report has been assembled and is available at the cost of $1.25 which includes postage and handling charge. Orders should be addressed to Department of Conferences and Institutes, University Extension, University of Mississippi, University, Miss.

Diseases Reclassified

Blood tests have shown two long-accepted forms of rheumatoid arthritis are not rheumatoid arthritis at all, but are distinct diseases of their own, Dr. Currier McEwen, New York University-Bellevue Medical Center, New York, reported to the Ninth International Congress on Rheumatic Diseases meeting in Toronto, Canada.

The two diseases are spondylitis and arthritis with psoriasis. Both of these have been regarded as forms of rheumatoid arthritis, the first one attacking the spine and the second appearing with a skin ailment.

And another ailment, Still's disease, which for years has been referred to as a variant of rheumatoid arthritis that strikes children, is simply rheumatoid arthritis.

The reclassifications became necessary after the standard sheep cell agglutination tests were performed on patients having the three diseases. In this test, a blood sample is taken from a suspected rheumatoid arthritic and mixed with specially treated sheep red blood cells. A noticeable reaction takes place if the patient is a true rheumatoid arthritic.

The researchers who developed the test believe the reaction is caused by a special substance which develops in the blood of arthritics.

Used on 131 patients with "classical" rheumatoid arthritis, the test was 98 per cent positive when a highly sensitive method was used. But in more than 100 cases of ankylosing spondylitis, a condition where the whole spinal column becomes enclosed in a bony encasement, only one positive case was turned up with the sheep cell test.

In a group of patients with arthritis and psoriasis, there was not even one case turned up by the test, Dr. McEwen reported.

False Radio and TV Ads Spotted by Public

Radio and TV fans are the chief investigators for the Federal Trade Commission's (FTC) new unit to monitor all radio and TV commercials for false advertising.

The unit was set up by the FTC in October, 1956, and has issued its first complaints against three national distributors of preparations claiming to be arthritis and rheumatism medicines. The charge is that none of the advertised products is an adequate, effective or reliable treatment.

Each year about 3,400 complaints are received from the public, the majority of them about false advertising in all media. From these the FTC investigators get the major number of the claims they study, although the FTC investigates some of its own cases.

A "substantial" number of the complaints relate to medical and drug products and some of them are quite difficult to handle, said T. Harold Scott, director of the new monitoring unit. The added problem in the medical field is that the FTC is concerned about what a particular product will do in a human being, and this is not always as easy to tell as it is with other types of products.

Much of the investigation of medical products is done by the FTC's division of scientific opinions. False advertising about drug products is probably more difficult to investigate now than it used to be because new products involve new ingredients. Not too much is known about them and a considerable amount of research is needed to see if they do what is claimed by the advertiser.

If the advertising sounds suspicious and there is enough evidence to warrant it, a complaint is issued to the advertiser and he is summoned to a hearing at which both the FTC and the advertiser can air their cases. The initial decision is made by an FTC hearing examiner. This initial decision is subject to review, change or adoption by the full five-man commission.

OVR Grant

A grant of $30,000 from the U. S. Office of Vocational Rehabilitation to support a research study on the economics of rehabilitation centers, was announced by Dean W. Roberts, M.D., executive director of the National Society for Crippled Children and Adults, the Easter Seal Society. The Society will contribute approximately $21,000 toward the total cost of $50,000 of the study which will survey operating costs and income of centers which provide care and treatment services for the crippled. The study, which is expected to be completed in two years, will include field visits to selected rehabilitation centers throughout the United States by members of the staff of the Society, consultants, statisticians and accountants.

Dr. Roberts stated: "This study proposes to secure data on sources of community financial support for rehabilitation centers, and hopes to lead to standard accounting practices for use by such centers. Within recent years there has been marked growth in the number of rehabilitation centers and there is every evidence that this trend will continue. Authorities stress the importance of services provided in such centers in the community, and are urging the establishment of additional facilities. These developments emphasize the importance of the kind of information which should result from the survey which the Society will conduct with the grant from the Office of Vocational Rehabilitation."

PM&R Fellowships and Scholarships

Fellowships and scholarships in the field of physical medicine and rehabilitation are now being offered to qualified physicians and co-professional personnel from foreign countries, it was announced by Dr. Donal Sheehan, dean of New York University Post-Graduate Medical School, a unit of NYU-Bellevue Medical Center. The purpose of the program is to encourage broader training in all phases of physical medicine and rehabilitation and disseminate modern rehabilitation practices throughout the world.

The fellowships, awarded yearly and subject to annual renewal for a total of three years, lead to specialization in physical medicine and rehabilitation. Preference is given to physicians who are other than private practitioners who will engage in teaching or public service careers. Six to twelve-month fellowships are also awarded to recognized specialists in other fields of medicine, which provides them with an opportunity for correlated study within their own area of primary interest. In addition, there are available a limited number of residencies for foreign physicians which provide the same training program as those offered to fellows.

Scholarships of six to twelve months' duration are available to physical therapists, occupational therapists, nurses, and other rehabilitation personnel who have completed their basic training in other countries.

Inquiries for applications and information may also be directed to Dr. Daniel J. Feldman, Director, International Training Program, The Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 400 E. 34th St., New York City 16.

Newly Registered Therapists

April 16, 1957

Scully, Mary Kathleen, 4847 Albemarle St., N. W., Washington, D. C.

June 11, 1957

Bublin, Charles A., PO Box 932, Eldridge, Calif.
Clark, Judith G., Kildare Dr., Jefferson City, Tenn.
DeLong, Gay M., 47 Garrison Rd., Glens Falls, N. Y.
Domijan, Frank J., 2009 New Jersey St., Los Angeles
Hammer, Darlene J., W. 56 31st Ave., Spokane, Wash.
Holden, Janet L., 95 High Plain Rd., Andover, Mass.
Hughes, Allen, 6959 S. Michigan Ave., Chicago
Jacob, Abraham, 625 Sixth St., New Kensington, Pa.
Lockman, Betty S., 2120 Cruger Ave., Bronx 62, N. Y.
Mickey, Max E., 2865 Cleveland Blvd., Lorain, Ohio
Pfirman, Carl L., 1315 W. South Ave., South Williamsport, Pa.
Polmeller, Francis, c/o Uptons, Mabton, Wash.
Rice, Walter H., Jr., 690 Union Ave., Bronx 55, N. Y.
Roberton, James W., 318 McHenry Rd., Glendale, Calif.
Rogers, Anna Lee, PO Box 75 Downey, Ill.
Sanders, Milton, Box 823, Hondo, Calif.
Seltzer, Seymour, 1777 Ocean Pkwy., Brooklyn
Sewell, Amelia T., 8023 Alhambra Ave., Paramount, Calif.
Zoerb, Louis N., 103 Grover St., Pittsburgh

June 21, 1957

Becker, Daniel O., 241 Vinnedge Ave., Blackwell, Okla.
Brewer, Myrtis J., 1161 E. Lake Rd., Erie, Pa.
Dresser, Harry, 804 Flora Vista Dr., Bell, Calif.
Egli, Anna M., New Salem, N. D.
Fish, Dorothy C., Elm St., Bethel, Me.
Shevling, Arlyn L., 30½ N. Seneca, New Castle, Wyo.

June 26, 1957

Argires, James P., 42 Norwood Circle, Birmingham, Ala.
Axiotes, Steve, 2051 Maury Ave., St. Louis
Bloemendal, Mary M., 411 Woodlawn, Grand Haven, Mich.
Chalmers, Mac V., College of Medical Evangelists, School of PT, 1720 Brooklyn Ave., Los Angeles
Conner, Jane L., 446 Hubbard, Grand Rapids, Mich.
Davis, Velura F., 5418 Page, St. Louis
Fisher, Laura Lea, 704 N. Colfax, West Point, Neb.
Francis, Marilyn J., 29305 Walnut, Flat Rock, Mich.
Gallagher, Mary J., 3811 W. Pine, St. Louis
Heyt, Esther B., 1719 Lake Dr., Grand Rapids, Mich.
Jacques, Lillian H., 5116A Greer, St. Louis
Kelly, Catherine Ann, 7716 St. Albans, St. Louis
Klaski, Carole Ann, 4124 Wilmington Ave., St. Louis
Klumpp, Joan G., Hersey, Mich.
Kraus, Jane C., 10909 Vargas Dr., St. Louis
Kritt, Carol Lou, 140 Apple Ave., Benton Harbor, Mich.
Krohn, Carol Mae, 17337 Snowden, Detroit
Mills, Pamelia Ann, 401 N. Shiawassee St., Owosso, Mich.
O'Connor, Sr. M. Adrian, 133 Bushwick Ave., Brooklyn
Richardson, Barbara W., 215 N. State St., Ann Arbor, Mich.
Ruhl, Barbara J., 1532 Pontiac Rd., S. E., Grand Rapids, Mich.
Steinberger, Lois J., 18474 Strathmoor, Detroit
Stenger, Jo Anne E., 3065 Taylor Ave., Cincinnati, Ohio

Turner, Gayle A., 501 Farmdale Ave., Ferndale, Mich.
Vacca, Carol Ann, 6121 Marwinette Ave., St. Louis
Weathersby, Virginia L., 416 Old Farm Rd., Pittsburgh
Wendel, Marilyn J., 33 Morrow Ave., Lockport, N. Y.
Williams, Diane, 124 Second St., Findlay, Ohio

July 16, 1957

Ast, Jane, 95 Christopher St., New York City
Havenner, Johann L., West End Farm, Croom, Md.
Henke, Anne M., 1112 22nd Ave., Sidney, Neb.
Hinshaw, Barbara, 308 W. 12th, Tulsa, Okla.
Jack, Beverly A., 212 E. 22nd St., Cheyenne, Wyo.
Nathanson, Lila H., 221 Southampton Dr., Silver Spring, Md.
Peck, Jewel E., 307 N. Maple St., Memphis, Mo.
Richards, Anna L., 1127 Lake Ave., Ft. Wayne, Ind.
Serotick, Myrna, 87-15 Avon Rd., Jamaica Estates, L. I., N. Y.
Sinensky, Marlene D., 343 Legion St., Brooklyn
Stedelin, Elizabeth D., 234 Leafland, Centralia, Ill.
Ullian, Devara L., 760 Broadway, Everett, Mass.
Weber, Susanne C., 8651 Eulalie Ave., Brentwood, Mo.
Wilson, Arnold B., RR 2, Box 626, East Moline, Ill.
Work, Virginia L., 41 Storer Ave., Pelham, N. Y.

Books Received

Books received are acknowledged in this column as full return for the courtesy of the senders. Reviews will be published in future issues of the journal. Books listed are not available for lending.

Guide to Medical Writing. A Practical Manual for Physicians, Dentists, Nurses, Pharmacists by Henry A. Davidson; **Annual Review of Physiology, Vol. 19** edited by Victor E. Hall; **Kurven Und Tabellen Fur Die Strahlentherapie** by Felix Wachsmann and Alexander Dimotsis; **Korperliche Und Geistige Eignung Zum Fuhren Von Kraftfahrzeugen Bei Hirnverletzten** by Artur Grossjohann; **Orthopedic Surgery in Infancy and Childhood** by Albert B. Ferguson, Jr.; **Physical Examination in Health and Disease** by Rudolph H. Kampmeier; **Clinical Orthopaedics, No. 8** edited by Anthony F. DePalma; **Hormones, Brain Function and Behavior** edited by Hudson Hoagland; **The Young Handicapped Child. Educational Guidance for the Young Blind, Cerebral Palsied and Deaf Child** by Agatha H. Bowley; **The Riddle of Stuttering** by C. S. Bluemel; **Bioenergetics** by A. Szent-Gyorgy; **Text-Book of Orthopaedic Medicine, Vol. II: Treatment by Manipulation and Massage** by James Cyriax; **Modern Therapy in Neurology** by Francis M. Forster; **Discussions on Child Development, Vols. I and II** edited by J. M. Tanner and Barbel Inhelder; **Principles and Technics of Rehabilitation Nursing** by Florence Jones Terry, et al; **Annual Review of Medicine, Vol. 8** edited by David A. Rytand and William Creger; **Contemporary Rheumatology** edited by J. Goslings and H. van Swaay; **Construction Manual for the U. S. Navy: Flexible Soft Socket for Upper Extremity Prosthesis** by Thomas J. Canty; **The Person in Psychology: Reality or Abstraction?** by Paul Lafitte; **The Physiology of Nerve Cells** by John C. Eccles; **The Rehabilitation of Speech** by Robert West, et al; **The Physician-Writer's Book** by Richard M. Hewitt; **Surgery in World War II: Orthopedic Surgery in the Mediterranean Theater of Operations** edited by John Boyd Coates, Jr.; **Rheumatic Diseases, Rheumatism and Arthritis** by Heinrich G. Brugsch; **Fundamentals of Clinical Neurophysiology** by Paul O. Chatfield; **Vocational Counseling with the Physically Handicapped** by Lloyd H. Lofquist; **Hypnosis in Medicine** by A. Philip Magonet; **Self-Hypnosis** by Melvin Powers; **Clinical Cardiopulmonary Physiology** edited by Burgess L. Gordon; **Practice of Medicine** edited by Jonathan C. Meakins.

The World Medical Association Needs You

Membership in the United States Committee of The World Medical Association offers you the opportunity to play a direct role in the world-wide affairs of organized medicine.

In these times, when mutual understanding seems to be the only road to peace, the universal language of medicine can help mend the ills of the body politic, just as it is mending the ills of the individual.

The 5000 leaders of American medicine who comprise the U. S. Committee of W.M.A. recognize that it is just as important for them to support medicine's international society as it is to be members of their county, state and national medical organizations.

W.M.A. has formulated an International Code of Medical Ethics and a modified Hippocratic Oath defining the ideals and obligations of physicians. W.M.A. has also set forth the basic principles that should protect the rights and status of doctors in all governmental social security schemes. And W.M.A. has done more than give lip service to these codes and principles. It is working day and night around the world to protect the profession wherever it is threatened by political interference that would prevent the

doctor from serving his patients according to his scientific knowledge and his conscience. Recently, W.M.A. has defended the rights of the medical profession against attempts by various non-medical organizations to draft a code of international medical law.

American physicians are singularly fortunate in having met their social and economic problems by voluntary action, turning back the threat of political domination. Our favored position only emphasizes our responsibility to lead the fight to preserve the principles of good medical practice for our colleagues abroad, and to help them restore these principles wherever they have been compromised.

Doctors the world over hold the same basic ideals and cherish the same hopes for medicine. W.M.A. has provided solidarity and strength by bringing physicians together for the solution of their common problems.

A tangible benefit of membership in the U. S. Committee is the privilege of attending the Annual Assemblies of The World Medical Association as an Official Observer. The 11th General Assembly will be held in Istanbul, Turkey, from September 29 to October 5, 1957. A large number of U. S. Committee members is expected to be present, many of them combining attendance at the Assembly with a tour of European centers of medical interest.

The W.M.A. Secretariat assists members of the U. S. Committee in making arrangements for foreign travel, providing information on foreign medical meetings and introductions to medical leaders and teachers abroad, and promoting to the utmost the international friendships and contacts of physicians.

Membership in the U. S. Committee also brings you the "World Medical Journal," published every other month by W.M.A. This magazine, edited by Dr. Austin Smith, (Editor of J.A.M.A.) brings you world-wide information on medical progress and problems in the 53 countries whose national medical associations comprise the membership of W.M.A.

W.M.A. is speaking for you and working for your interests in its contacts with other world organizations concerned with health or medical care, such as the World Health Organization (W.H.O.) of the United Nations, the International Labour Organization (I.L.O.), the International Social Security Association (I.S.S.A.) and the International Committee of the Red Cross.

Some other activities and accomplishments of W.M.A. of interest to every American physician are sponsorship of the First World Conference on Medical Education in London in 1953 and the second such conference to be held in Chicago in 1959; promotion of international exchanges of medical students and teachers, lectures and clinical teaching by traveling teams of physicians; development of an international program to improve occupational health services; promotion of a freer flow of proven therapeutic agents throughout the world by urging removal of unwarranted trade restrictions and arbitrary licensing requirements in certain countries; promotion of medical research, by promoting national pharmacopoeias and defending the rights of individuals discovering new drugs and agents to name them; development of an international emblem (in conference with the International Committee of the Red Cross and the International Committee on Military Medicine and Pharmacy) for identification and protection of medical units and civilian physicians engaged in civil defense in war time; and promulgation of regulations stating the rights and duties of such physicians; formulation of plans for a central repository of medical credentials, to enable qualified physicians of every country to file proof of their identity and qualifications with a safe and authoritative international source; conducting useful studies of many subjects of world-wide interest to physicians, such as post-graduate medical education, hospital facilities, cult practices, medical advertising, and effects of social security legislation on medical practice.

The World Medical Association brings you solid benefits as well as the satisfaction of taking part in the international affairs of our profession. You can help make its work more effective by joining the U. S. Committee. The nominal dues of Active Membership in the U. S. Committee are only $10.00 each year. The Committee is seeking to double its present membership of 5,000 American physicians this year. The objectives of W.M.A. are your objectives. It is your voice in world medical affairs. We invite you to add your name and your voice in guiding and strengthening this great organization. Write Louis H. Bauer, M.D., Secretary General, W.M.A., 10 Columbus Circle, New York City 19.

Medical Research Fellowships and Grants

Applications for awards available July 1, 1958, will be received by the Life Insurance Medical Research Fund as follows: Until October 15, for postdoctoral research fellowships; candidates may apply for support in any field of the medical sciences. Preference is given to those who wish to work on cardiovascular function and disease or related fundamental problems. Minimum stipend is $3,800, with allowances for dependents and necessary travel. Until November 1, for grants to institutions in aid of research on cardiovascular problems. Support is available for physiological, biochemical, and other basic work broadly related to cardiovascular problems as well as for clinical research in this field. About $1,000,000 will be available for the two types of award. Information and application forms may be obtained from the Scientific Director, Life Insurance Medical Research Fund, 345 E. 46th St., New York City 17.

Pediatric Cardiology Fellowship

A clinical fellowship in pediatric cardiology is offered in the department of pediatrics of the Yale University School of Medicine, New Haven, Conn. The stipend is $4,500 per annum but the candidate must be a United States citizen and have had at least two years of pediatric training. Pediatric cardiac diagnostic and follow-up clinics, consultations, and assistance in the care of cardiac surgical patients will be offered, together with the performance of various diagnostic examinations and assistance with research in the cardiovascular laboratory. The applicant should correspond with Dr. Milton J. E. Senn, Professor of Pediatrics, or Dr. Ruth Whittmore, Director, New Haven Rheumatic Fever and Cardiac Program, Department of Pediatrics, Grace-New Haven Community Hospital, 333 Cedar St., New Haven 11, Conn.

Principles of Medical Ethics of the American Medical Association

These principles are intended to aid physicians individually and collectively in maintaining a high level of ethical conduct. They are not laws but standards by which a physician may determine the propriety of his conduct in his relationship with patients, with colleagues, with members of allied professions, and with the public. The House of Delegates of the American Medical Association at the 1957 Annual Meeting approved the long-discussed restatement of Principles of Medical Ethics, originally submitted at the 1956 annual meeting. The final version was presented by the Council on Constitution and By-laws and then amended by reference committee and House discussions in New York.

1. The principal objective of the medical profession is to render service to humanity with full respect for the dignity of man. Physicians should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion.

2. Physicians should strive continually to improve medical knowledge and skill, and should make available to their patients and colleagues the benefits of their professional attainments.

3. A physician should practice a method of healing founded on a scientific basis; and he should not voluntarily associate professionally with anyone who violates this principle.

4. The medical profession should safeguard the public and itself against physicians deficient in moral character or professional competence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

5. A physician may choose whom he will serve. In an emergency, however, he should render service to the best of his ability. Having undertaken the care of a patient, he may not neglect him; and unless he has been discharged he may discontinue his services only after giving adequate notice. He should not solicit patients.

6. A physician should not dispose of his services under terms or conditions which tend to interfere with or impair the free and complete exercise of his medical judgment and skill or tend to cause a deterioration of the quality of medical care.

7. In the practice of medicine a physician should limit the source of his professional income to medical services actually rendered by him, or under his supervision, to his patients. His fee should be commensurate with the services rendered and the patient's ability to pay. He should neither pay nor receive a commission for referral of patients. Drugs, remedies or appliances may be dispensed or supplied by the physician provided it is in the best interests of the patient.

8. A physician should seek consultation upon request; in doubtful or difficult cases; or whenever it appears that the quality of medical service may be enhanced thereby.

9. A physician may not reveal the confidences entrusted to him in the course of medical attendance, or the deficiencies he may observe in the character of patients, unless he is required to do so by law or unless it becomes necessary in order to protect the welfare of the individual or of the community.

10. The honored ideals of the medical profession imply that the responsibilities of the physician extend not only to the individual, but also to society where these responsibilities deserve his interest and participation in activities which have the purpose of improving both the health and the well-being of the individual and the community.

New Treatment for Aged VA Patients

The Veterans Administration reports satisfactory results from a new "dynamic" treatment devised to rehabilitate severely disabled older patients.

Patients involved were victims of strokes, hardening of the arteries, arthritis, or multiple sclerosis. They were placed in special rehabilitation wards after receiving maximum benefits from specific medical and surgical treatments.

At one hospital 50 of the 60 aged patients given the treatment progressed enough to be discharged; at another 25 of a group of 130 left the hospital for jobs, 40 others were discharged, and 55 showed worthwhile permanent improvement.

Medical Quackery in Mails Reaches New High

Use of the mails to promote medical quackery is at the highest level in history, Postmaster General Arthur E. Summerfield said recently. The report stated that medical frauds today are more lucrative than any other criminal activity and that medical fraud cases now pending represent an annual loss to the public of $50 million.

Medical frauds most common, in order of popularity, are "dietless" reducing schemes and "sure cures" for cancer, arthritis, skin trouble, baldness and "lost manhood." Mr. Summerfield urged citizens to report suspected mail frauds to the postoffice department for prompt investigation.

Notice of Meeting

The Pennsylvania Academy of Physical Medicine and Rehabilitation will meet on September 17, 1957, at the Penn Sheraton Hotel, Pittsburgh.

FTC Cracks Down on Herb Medicines

Two herb medicines, advertised as a cure for arthritis and rheumatism, as well as an aid for such troubles as poor digestion and poisoned blood, have come under attack by the Federal Trade Commission (FTC).

The similar, if not identical, drug preparations "O-Jib-Wa Bitters" and "Oscoda Bitters" are produced in Michigan and one of them, O-Jib-Wa Bitters, is sold only in that state, most sales being made through drug stores.

It has been extensively advertised in Michigan newspapers and, because of this, the FTC has claimed legal power in the case. The commission has ordered the producers of the herb medicines to stop misrepresenting their products in interstate commerce.

The case against the herb medicines has been before the commission for some months. An initial decision against O-Jib-Wa Bitters was contested on the grounds that the FTC had no jurisdiction over a product sold exclusively within the borders of a state.

The FTC ruled, however, that the advertising was in newspapers that were delivered outside the state of Michigan and, therefore, was likely to induce sales of the drug product.

The commission's report stated that the medicines were a "10% glycerine and water decoction," made with equal parts of 11 powdered herbs plus a liquid extract of the herb mandrake, and a preservative.

O-Jib-Wa Bitters are made by a small company employing six persons and in 1954-55 grossed approximately $180,000 annually, the FTC reported.

The other medicine, Oscoda Bitters, is produced to handle all out-of-state customers. When requests come in from other states for O-Jib-Wa Bitters, they are sent back with an order blank for Oscoda Bitters and a letter stating that the two products are almost identical.

Flexin Reduces Muscle Spasm in Geriatric Patient Study

Administration of the new oral muscle relaxant zoxazolamine has resulted in a "markedly increased" ability to function among a group of geriatric patients with neurologic, orthopedic and arthritic disorders.

The study was conducted in a nursing home and rehabilitation center by Dr. Edward Settel of Forest Hills, New York. Included were 46 patients representing a wide range of geriatric pathology involving skeletal muscle spasm. The results of Dr. Settel's investigation appear in *The American Practitioner and Digest of Treatment* (8:443, 1957).

All patients in the study group had the common symptom of voluntary muscle spasm and pain associated with a variety of disease entities both acute and chronic. Patients ranged in age from 48 to 87 years of age.

Diminution of stiffness, increase in range of motion, and reduction of pain — all without interference with usual function — were considered the criteria of improvement.

In cases of acute and chronic recurrent low-back syndrome, Dr. Settel reported that seven of eight patients showed visible, objective improvement. Results in acute cases were obtained within three to four days of therapy. Patients with long-standing, recurrent low-back syndrome showed improvement after one or two weeks of treatment.

Six of the seven patients with acute torticollis (wry neck) experienced relief in three to four days after the administration of the muscle relaxant was initiated.

All five patients with multiple sclerosis showed measurable diminution of painful spasticity after one to three weeks of therapy on a dosage of 500 mg. t.i.d. The relaxation and increased range of motion persisted after dosage was reduced to 250 mg. t.i.d. Spasm returned upon discontinuation of the drug.

"Let Brotherly Love Continue"...

portrait of philadelphia

The city and county of Philadelphia is rich in history and achievements. Founded in 1682 by William Penn, it was given the name of Philadelphia which was a biblical city in Asia Minor. In 1701 the city was granted its first charter while in the year 1854 the city and county were made co-extensive. All traces of independent local governments were consolidated into one overall government. Today the city is politically divided into fifty-two wards, although many areas still retain their sectional names, such as Germantown and Frankford.

In American history, no other city in the United States can claim a more famous background, particularly in Colonial and Revolutionary days, than Philadelphia. Reference has been made to Philadelphia as the "Cradle of Liberty" because it was here that the Declaration of Independence was signed on July 4, 1776 in America's most famous landmark, Independence Hall. During the American Revolution and the subsequent organization of the national government, Philadelphia was the center of events as well as the principal city of America because of its great commercial, financial and cultural wealth. The First and Second Continental Congress met here and the city was the National Capitol from 1790 to 1800. Philadelphia was the capitol of the Commonwealth of Pennsylvania until 1799 when the capitol was moved to Lancaster and later to Harrisburg. Independence Hall was also the site for the signing of the Constitution of the United States. Other places of interest in Philadelphia which can trace their fame to the birth of the United States include Congress Hall, the national capitol from 1790 to 1800; Carpenters' Hall, the meeting place of the First Continental Congress; and the Betsy Ross House where the first American flag was made.

Philadelphia has long been known for leadership. Some of the more important Philadelphia "firsts" are the first steamboat, the first steam automobile, the first hospital in America, the first medical college, the first women's medical college and the first college of pharmacy. In the field of science the city was the site for the first Astronomical Observatory and the first public demonstration of the telephone. America's first bank, saving society, fire insurance company and building and loan association were established here. The city also claims the first paper mill, the first sugar refinery and the first daily newspaper (published in 1874). Philadelphia was selected as the location for the first U. S. Mint. The country's first zoological gardens and its first public school were built in Philadelphia. These are a mere handful of many hundreds of firsts which Philadelphia can rightfully boast and claim.

The composition of Philadelphia's population has changed materially over the past several centuries. The early settlers were predominantly English, German, Scotch-Irish and Welsh, with a sprinkling of other nationalities which came here to seek the freedom and tolerance which prevailed. The city's population grew from 400 in 1683 to 35,000 at the time of the signing of the Declaration of Independence. Today, its population is estimated to be 2,170,000. The city provides a haven for every race, creed and nationality. Outstanding characteristics of Philadelphians are their individual initiative, their thriftiness and their desire to own their own home. Forty per cent of employed Philadelphians are engaged in skilled or semi-skilled occupations. Philadelphia banks are the depository for almost five and one-half billions of dollars of which $1,655,000,000

First of a series of articles about the city selected for the 1958 meeting.

are in the four savings fund societies and thirty-eight federal savings and loan associations. An estimated sixty per cent of the occupied dwelling units in Philadelphia are owner-occupied, the highest percentage of any American City with a population exceeding 500,000. This fact rightfully justifies Philadelphia's claim to be called the city of homes.

In twentieth century manufacturing and technology, Philadelphia is among the leaders principally due to its highly diversified industrial setup and the research facilities of its business firms and educational institutions. Thousands of different manufactured products are made by the 5000 industrial establishments which results in Philadelphia being referred to as the workshop of the world. The city is a great textile center, the second largest oil refining center in the United States and is the hub city of one of the world's greatest industrial areas. Its metal, sugar refining, leather and leather goods industries are among the best in the nation. Printing and publishing also rank high. Products of Philadelphia plants are known the world over for quality. These include such well-known trade names as Disston saws, Philco radios, Exide batteries, Stetson hats and Phillies cigars. In time of war, the city becomes an arsenal for democracy. Not only do the peacetime industries convert to war production of guns, tanks, ships, explosives and clothing, but the federal government's own manufacturing plants supplement this production. Philadelphia is home to the huge Philadelphia Naval Base, the Naval Air Material Center, the Frankford Arsenal, the Naval Aviation Supply Depot and the Marine Corps Depot of Supplies.

Philadelphia's top billing as an industrial center can be largely attributed to the excellent transportation and port facilities available to business and the populace. Three of the nation's great trunk-line railroads serve the city. These are the Pennslyvania Railroad, the Reading Company and the Baltimore & Ohio Railroad. Practically every major airline has scheduled stops at the modern Philadelphia International Airport. The city is also at the crossroads of the nation's most modern turnpikes and expressways which provide excellent over the road movement for the motor truck traffic. The Port of Philadelphia, the second largest in the nation on the basis of tonnage handled and the leader in imports, is navigable the year round. It is one of the world's largest fresh water ports. Some outstanding features of the port are Port Richmond, the largest tidewater terminal in the United States; the only East Coast port with 100-ton cranes; a belt-line railroad connecting all major piers with the trunk line railroads; two of the largest and most rapid oil handling docks on the Atlantic Coast; and three of the nation's most modern ore unloading piers.

In the arts, education and medicine, Philadelphia is richly blessed. Such nationally recognized places as the University of Pennsylvania, Temple University, Franklin Institute, Curtis Institute of Music, Philadelphia Orchestra, Philadelphia Art Museum, Atwater Kent Museum, Academy of Natural Sciences and the Fels Planetarium are places of interest to all. The city's seventy-five hospitals and five medical colleges are constantly conducting research programs in quest of new life saving technics and medicines. Its medical schools have a world-wide reputation. Thirteen hundred churches provide religious inspiration to hundreds of thousands of Philadelphians of all denominations. The city's free library system, with the main library building being one of the largest in the world and exceeded only by the British Museum, the Library of Congress and the New York Library, has 1,753,000 volumes on its shelves plus an additional million and a half copies of documents and pamphlets.

A wide variety of recreational facilities are readily available to Philadelphia's residents and to visitors. Fairmount Park, the world's largest natural park within a city's limits, is a pleasure spot featuring scenic beauty, historic spots, playgrounds, excellent sports facilities, musical concerts from Robin Hood Dell and museums of art, horticulture and marine life. The park covers an area of 4,045 acres. In addition to this park

system, the city maintains and operates 105 recreation centers and playgrounds covering 8,600 acres of ground. Practically all types of professional and amateur sport contests are available to those who prefer to be spectators.

The history and development of William Penn's "Greene Countrie Towne" into one of the nation's leading cities, is only part of a story yet to be told.

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in 1958 . . .

36th Annual Session, American Congress of Physical Medicine and Rehabilitation, Philadelphia, Hotel Bellevue-Stratford, August 24-29, 1958.

FROM TOBACCO ILLS TO REDUCING PILLS . . . Subcommittee of House Government Operations Committee, which explored cigarettes and filters, turned attention to advertising claims for weight reducing drugs. Sole witness at opening hearing was a Newark physician who emphasized that self-prescription reducing is hazardous. Further medical testimony will be given by physicians, post office, Food Drug and FTC officials.

●

ASIAN FLU SITUATION . . . Surgeon General Burney's press conference on Asian influenza generated more questions than answers. It left no doubt of government's good intentions and its actual effectiveness in stimulating vaccine production and planning for a public education campaign. But the conference could not supply answers to these questions, to cite only a few: Will one dose of the monovalent vaccine now in production give protection for an entire season?; how much will it cost the public? Assuming that demand for the vaccine will exceed supply well into winter months, should a priority system be established — by vocations or age groups or whatever — and, if so, should this be done at national or state or county levels?

●

UNIQUE TV CONFERENCE . . . Conference on November 7-8, 1957 at Chicago's Sheraton-Blackstone will be first of its kind — a meeting of minds and ideas directed at improvement of television and radio presentation of medical subjects. It will be sponsored jointly by National Association of Radio and Television Broadcasters and American Medical Association. Broadcasters and representatives of medical societies, voluntary health organizations and hospitals will be welcome at the conference.

●

NEW FOUNDATION IS FORMED ON NEUROLOGICAL RESEARCH . . . Establishment of National Neurological Research Foundation has been announced. Its aim is to raise public funds for support of research and fellowships. Executive secretary is Mrs. Rodgers Denckla, 3255 N Street N.W., Washington, D. C. Among physicians identified with the enterprise are Doctors Mark D. Altschule and Raymond D. Adams, of Harvard Medical School; Seymour S. Kety, of National Institutes of Health, and Cornelius P. Rhoads, of Sloan-Kettering Institute.

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— MEMBERSHIP NEWS —

Archives of Physical Medicine and Rehabilitation

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IMPORTANT ANNOUNCEMENT

The Editorial Board of the *ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION* has established a special subscription rate of $5.00 per year to be granted to bonafide residents in physical medicine and other specialties in the United States, its territorial possessions, Mexico, Canada, United Kingdom and Europe. The following rules apply:

1. The subscription may be entered for a period not to exceed three years.
2. All orders for this special rate must be accompanied by a letter of verification from the director of the training program confirming the resident's status and the number of years remaining in the resident's training program.
3. This special rate is not applicable if less than one year of training remains to be completed in the applicant's residency program.
4. The subscription is not transferable and must be entered in the resident's name. It cannot be sent to a hospital, organization, institution, or a person other than the subscriber.

Those desiring to avail themselves of the special rate to residents should write to Archives of Physical Medicine and Rehabilitation, 30 N. Michigan Ave., Chicago 2.

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Every Series E United States Savings Bond you've bought since February 1, 1957 pays you a new, higher interest—3¼% when held to maturity! It reaches maturity *faster*—in only 8 years and 11 months. And redemption values are higher, too, especially in the earlier years.

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But if you're new to the game, find out about Savings Bonds and what they can do for your future. Ask your banker, or check with your employer about the automatic Payroll Savings Plan that makes saving painless and easy.

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WANTED — Board Certified or Qualified Physiatrists for duty in professional care program of two of Central Miners Memorial Hospitals; full-time positions with starting salary of $18,000-$20,000. U. S. citizenship and eligibility for licensure in Kentucky and West Virginia required. For details address — The Clinical Director, Miners Memorial Hospital Association, 1427 Eye St., N. W., Washington 5, D. C.

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WANTED: (a) Physiatrist, chief, department, clinic and hospital serving industrial group; if Board, $20-$25,000; South. (b) Physician well qualified in rehabilitation and physical medicine; new center; California. PHYSICAL THERAPISTS FOR FOLLOWING: (c) Full time teaching positions; university school of physical therapy; minimum starting salary $5000. (d) Chief; new hospital, completely equipped physical therapy department; duties consist of working with crippled children, poliomyelitis and post-polio, industrial accidents, etc.; attractive location, northern California; $450. (e) To take charge of department, 250-bed general hospital; woman preferred; $5-$6000; Chicago area. (f) Chief; childrens hospital, 225 beds; university city, East. (g) To take charge of department, new 200-bed hospital; college town, South. (h) Occupational therapist to take charge of department, rehabilitation and physical disabilities, mostly industrial cases, mainly adults, some children; $5500-$6000.

For further information regarding these opportunities, please write Burneice Larson, Medical Bureau, 900 N. Michigan Avenue, Chicago.

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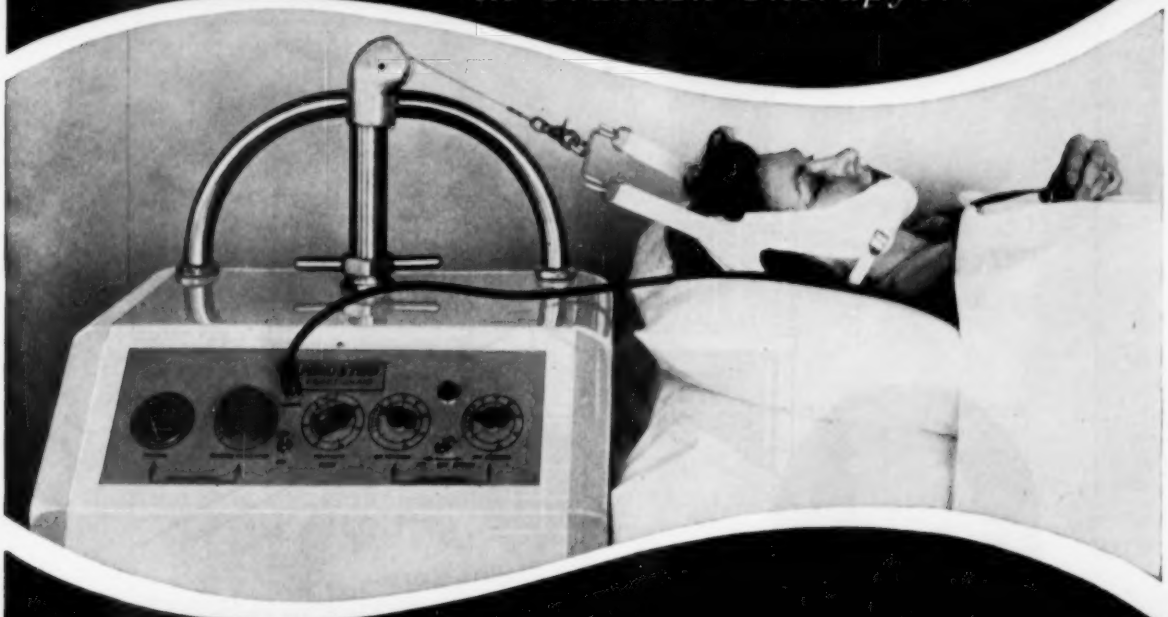

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In a quiet house in Lynn, Massachusetts, in 1889, an old woman lay waiting for death. "Well," she said in amused wonder, "if this is dying, there is nothing very unpleasant about it." And the book closed for one of the most remarkable of the many remarkable women America has produced.

Her story began on a night very long ago when, as a Quaker girl in Nantucket, Maria Mitchell discovered a comet—and got a gold medal worth 20 ducats from the Danish King.

Overnight she became a celebrity. But many people, wedded to the popular notion of woman as a "household ornament," regarded Maria as an unwelcome phenomenon and her discovery as only an accident.

That was because they didn't know Maria Mitchell. At 12 she could regulate a ship's chronometer; at 17 she understood Bowditch's "Practical Navigator" and was studying science in self-taught French, German and Latin. In time she would become the first woman member of the American Academy of Arts and Sciences, the first woman astronomy professor —in Matthew Vassar's Female College—and a member forever of New York University's Hall of Fame.

Moreover, all her adult life she was to work with growing success in the crusade to make American women free.

No one these days would question the rewards of Maria Mitchell's crusade. Women today enrich every level of public life. And, in family life, they guard financial security two times out of three. One reason, probably, why their families have more than $40,000,000,000 saved—in guaranteed-safe United States Savings Bonds.

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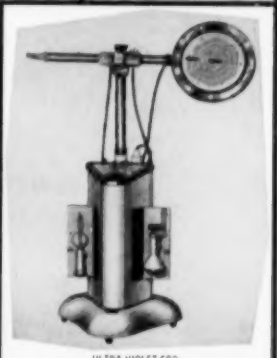

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This exaggerated comment gave us a chuckle as perhaps it will you.

Now that this Sunday afternoon labor of love is done here goes for a sunbath and a swim.

Cordially,

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